Gleanings in Bee Culture

CONTENTS

March, 1957 Vol. 85, No. 3

Monthly Honey Report	Walter Barth	133
Establishing Package Bees	M. H. Haydak	137 - 141
Colony Management in Comb Honey Production	S. Joaquin Watkins	142 - 145
How to Introduce Queens in Early Spring	Julius Lysne	145
What is Wrong with Beekeepers?	John W. Holzberlein	146 - 149
A Beginner Makes Good	Dick Gerathy	150 - 151
Beekeeping in Kansas	R. L. Parker	152 - 154
Argentine Ants	William Harman	155
Old Bruin Meets His Doom	E. A. Byer	156 - 157
Acarine Disease Found in India	A. S. Michael	157
Queen Rearing for the Amateur Beekeeper	H. H. Laidlaw	158 - 159
Wide Alighting Boards Save Bees	J. Allen Smith	159
Editorials		160 - 161
Newsreel		162 - 163
Honey Quick Breads	Mrs. Benj. Nielsen	164
Live and Learn	Propolis Pete	165
From Foreign Lands	Erika Barth	166
Let's Talk about Honey Plants	Harvey B. Lovell	167
Beekeeping in Cuba	Gonzalo S. Ordetx	168 - 171
My Experience in Feeding Pollen Substitute	Cecil B. Hoy	171
A Talk to Beekeepers	M. J. Deyell	172 - 175
Our Cover Photo		175
American Federation Meeting at Long Beach, California		176 - 177
Just News		178

Subscription Rates: United States, Canada, Pan American countries, and Spain, one year, $2.00; two years for $3.50; three years for $5.00. Single copy, 20c. Other countries, 50c per year additional for postage. Discontinuance: Subscription stopped on expiration. No subscriber will be run into debt by us for this journal. Change of Address: Give your old address as well as the new and write the name to which the journal has heretofore been addressed. Remittance should be sent by post office money order, bank draft, express money order, or check. Contributions to Gleanings columns solicited; stamps should be enclosed to insure return of manuscript to author if not printed. Advertising Rates: Advertising rates and conditions will be sent on request. Results from advertising in this journal are remarkably satisfactory. Advertisers' Reliabilty: While the publishers do not guarantee advertisements in this journal, they use utmost diligence to establish in advance the reliability of every advertiser using space in this journal.

Entered as second class matter at Post Office at Medina, Ohio. Published monthly. Opinions expressed by the writers in these columns are not necessarily the opinions of the editors.

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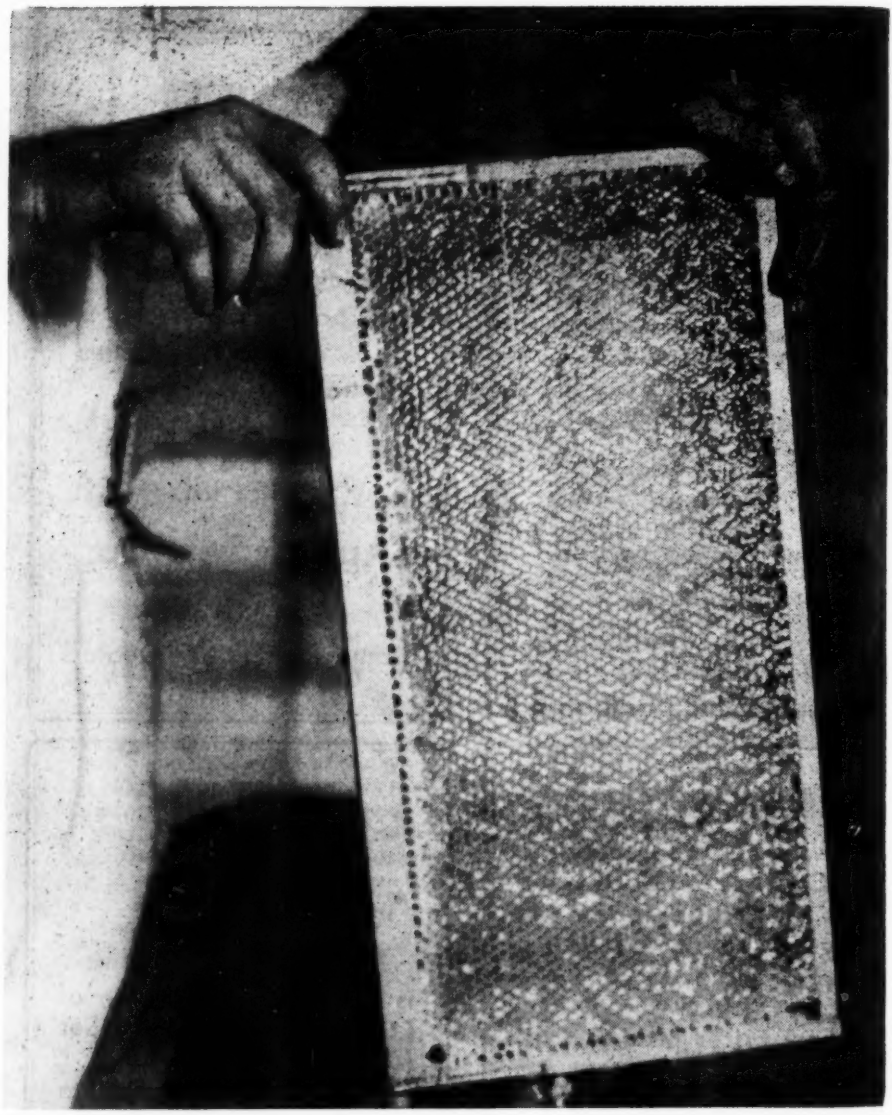

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Monthly HONEY Report

WALTER BARTH, Field Editor

IT IS NOT always possible to get every reporter to send in his report each month. So when all correspondents in Arizona reported in a very optimistic tone, their replies were placed side by side and compared. It had rained in Arizona and beekeepers were very optimistic for a desert crop honey. Several slow penetrating rains had changed the honey picture for that state.

Throughout the country the situation is developing in the following fashion: Bees are wintering well but consuming stores heavily; some bee flights are needed but not urgent; more moisture is needed in spite of good snows in some areas; honey supplies are fairly well cleaned up, and the demand has naturally remained strong. There are exceptions, of course, in restricted areas.

Price Cutting Has Started

In view of the good honey market it is a sorry sight to see that in the northwest some large honey packers are starting to cut prices. In Washington some packers are allowing a **50 cent cash allowance to retailers on five-case orders** while others have just **lowered their prices 50 cents per case** until further notice to meet the five-case deal competition. Here is a pathetic situation that can only harm the market, and unfortunately, like a disease, can spread very rapidly.

Early Flow Possible

Going over to Florida where one of our earliest honey flows start, we find that the citrus flow may come very early this year. This was brought on by two months of mild weather. However, this early flow has the danger of being cut off by a frost. Most Florida bees will require feeding to get them ready for this potentially early flow. Plants are generally retarded from a drought which has been severe for Florida. Right now beekeepers are keeping their fingers crossed against an early freeze that would change the picture overnight.

Here are some reports that will give the picture for the general areas around these states:

Indiana: Bees are wintering satisfactorily throughout the state. After a week of zero and sub-zero weather temperatures, it is warm enough for bees to fly in a limited way. **Clovers are in excellent condition.** Moisture conditions are improving, markets are satisfactory, and prices are holding firm.

Vermont: Some recent snow has helped moisture conditions. It is very evident in this state that bees are short of winter stores and heavy spring losses can be expected. The honey market continues to be good and honey now on hand will be sold long before the new crop is available.

ROGER MORSE ACCEPTS NEW APPOINTMENT

Roger Morse of the Dept. of Entomology, Gainesville, Florida, has accepted a position with the Waltham Field Station of Massachusetts as Entomologist. Further details will appear in the April issue.

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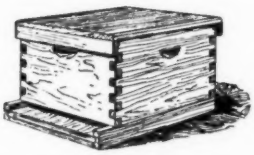

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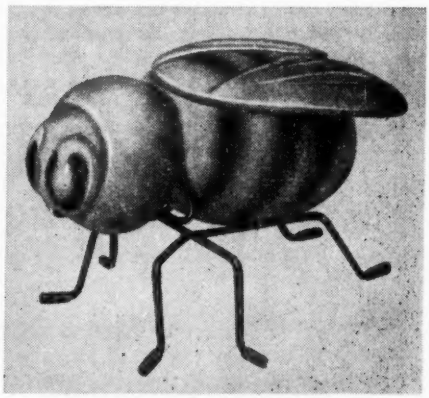

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Establishing Package Bees

from Extension Bulletin 204

by M. H. HAYDAK, University of Minnesota

THE BEST TIME to establish package bees varies in different parts of the country and from year to year. In general the best time is just at the beginning of the fruit tree and dandelion-bloom period.

Keepers accustomed to handling bees under unfavorable conditions might start a week or two earlier. The best time is about April 15 to April 25 in the southern part of Minnesota; the last week of April and early May in the central portion; and from May 1 to May 20 in the northern part. Of course, package bees may be put out any time up to the middle of the season and still build up into strong colonies the same year, but they would not be able to produce as much surplus honey as they would if they were put out earlier.

Beginners not accustomed to handling bees should choose a starting date late enough to be sure of plenty of bloom and fairly warm weather, because bees may be handled much better under those conditions.

The beginner should remember that

Unloading packages of bees from truck.

it takes about six weeks from the time the package queen lays an egg to the time the resulting bee starts bringing nectar and pollen to the hive. Another month is necessary for the colony to gain strength. For honey production, therefore packages should be installed at least two and one-half months before the start of the main honey flow.

Size of Package

Packages of the two-pound and three-pound size are used almost universally for establishng new colonies.

The two-pound size is much more popular except in sections where the surplus crop, such as white clover, alsike, and basswood, is produced in the early part of the season.

The three-pound package builds up more rapidly and is better in the early-producing regions. It is a better package for the beginner, since it may be put out later in the season when conditions are more favorable and may still develop into a strong colony in time to take advantage of the surplus flow.

By keeping records carefully for a few seasons, the beekeeper can determine the best average date and the best size of package for his particular locality.

Number of Packages

Whether beekeeping is conducted as a hobby or as a business, the beekeeper must have the special temperament that will enable him to enjoy the work and to make a success of it. Apparently very few people possess the proper qualifications to continue in the work. For this reason, and because the beginner is likely to make many costly mistakes, it is well to start with just a few colonies of bees.

Bee supply companies usually pack their hive parts in units of five, and five is the smallest number on which a quantity discount is given. Five hives are sufficient to test one's territory and one's interest in beekeeping, and to produce worthwhile returns.

Preparing for the Bees

A beekeeper's equipment should include at least three hive bodies, with frames and foundation for each standard one-story hive or an additional two or three supers for a modified Dadant hive. The beginner should also purchase a smoker, a bee veil, and one or two hive tools. A queen excluder may also be purchased. Directions for assembling are usually supplied with the equipment. However, it is better to have a beekeeper or a supply dealer explain the assembling.

The hives should be assembled and painted with aluminum or white paint during the winter or early spring so that everything is ready when the packages arrive. Bottom boards should be painted all over, but hive bodies and outer covers only on the outside. The inner covers and queen excluders are never painted, except for the exposed rim. The bee-comb foundation should be ordered early but should not be put in the frames until shortly before it is to be used. The wax is brittle in cold weather and may easily be injured by handling at low temperatures.

The beekeeper should know the exact date of shipment of the packages and the time required for transportation. Arrangements should be made with the express agent ahead of time so that the beekeeper will be notified when his packages arrive. Then he can pick them up immediately.

If, on arrival, any of the packages contain only dead bees or have an undue proportion of dead bees, the express agent should be asked to sign a **bad-order receipt** describing the condition and giving the apparent cause. The package then should be accepted. The shipper should then be notified of the loss. He will replace the packages at once, and the bad-order receipt will enable him to collect from the express company unless the loss is his own fault.

A cellar or basement is a good place to keep the bees before installing them in the hives. A basement usually affords the right conditions—darkness (or dim light), quiet, no strong air currents, and a low enough temperature to prevent undue excitement or activity.

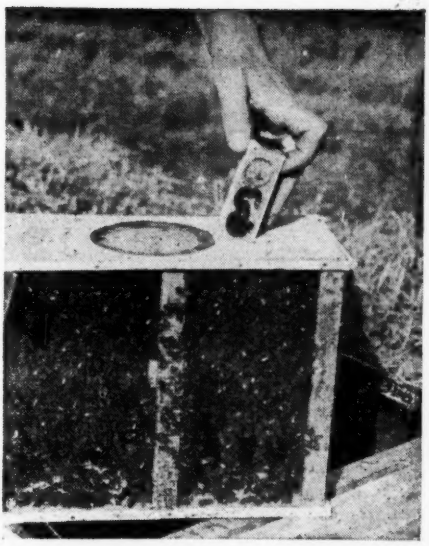
The bees should be fed liberally with sugar sirup, made by dissolving white granulated sugar, beet or cane, in an equal volume of water. A good way to make the sirup is to pour boiling water over the sugar and stir until the solution is clear. The feeding may be done by brushing, sprinkling, or spraying the sirup on the screened walls of the cages.

The packages should not be disturbed then until evening.

On cool days package bees may be put into hives at any time of day, but the best plan is to begin the operation late enough in the evening so it may be completed just before dark. In this way, there will be less excitement among the bees, very little flight, and consequently little danger of bees drifting from one hive to another and making colonies of unequal strength.

Installing Package Bees

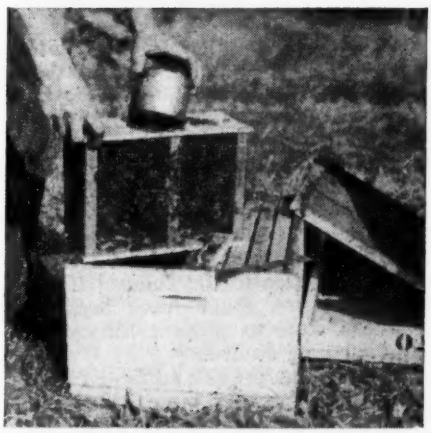
The installation of package bees is the transfer of the bees from the screened cage to the combs of the hive. Described here are two methods suitable for the beginner as well as for the experienced beekeeper. As the operator becomes more familiar with the ways of bees he may vary some of the steps according to conditions and his inclinations.



Taking the queen cage out of the package.

Cage Method

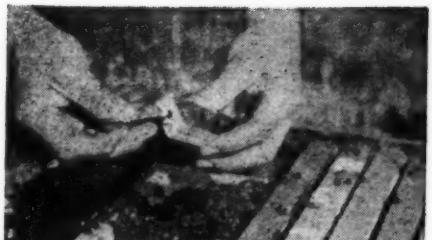
Place the hives on their permanent locations. Remove four or five combs from one side of each hive. Cover the hives and close the entrances completely. In the evening feed the package bees all the sugar sirup they will take, and place one package in each hive in the space provided by removing the combs.



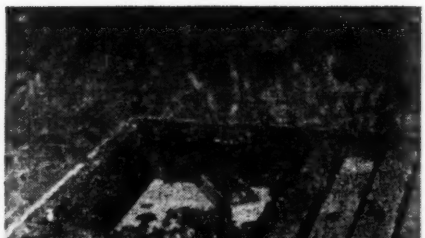
Removing the feeder can.

Then, starting with the first hive, remove the feeder can from the package and pull up the queen cage, which is suspended by a wire through the same opening or is enclosed in a special opening near the feeder can. Examine it carefully to make sure the queen is alive. Remove the small piece of cardboard or cork from the candy end of the queen cage, and with a small nail or match poke a hole through the candy in that end of the cage. Be careful not to injure the queen. The hole should not be large enough to allow the bees to come out immediately, but it should

Removing the cardboard from the queen cage.



Making an opening through the queen cage candy.



Packages installed and hives ready to close.

allow the package bees to release the queen during the night or the following day.

Place the queen cage, screened side up, on top of the shipping cage next to the first honey comb. It may also be wedged between the top bars of the first and second combs, with the opened end of the cage uppermost, allowing space for the queen to escape beneath the inner cover. In the latter case, shake a pint or more of bees on the queen cage to hasten the transfer from the shipping cage to the combs. If the weather is cool, shake more bees on the queen cage to prevent the queen from becoming chilled.

Before hiving, provide sufficient food to last for a week or more. If combs containing honey and some pollen are available, place two combs near the shipping cage so the bees will find them without delay. If only empty combs are available, fill two or three with sugar sirup by holding them at an angle and pouring or spraying the sirup into them.

It is better, however, if five or ten pounds of sugar sirup is provided in a pepper-box feeder. Such a feeder is made by punching a dozen or so small nail holes in the lid of a 10-pound friction-top pail or through the zinc top of a fruit jar from which the porcelain plate has been removed. Invert this feeder, filled with the sirup, over the top bars near the queen cage and place an empty full-depth super on the hive for protection. If an inner cover is used, place it over the lower hive body and place the feeder can over the hole in the inner cover.

Next, put on the hive cover and provide a small entrance. Place a brick or a stone on top to prevent the cover from being blown off by the wind. The bees should not be disturbed for at least a week in order to give the queen a chance to become fully accepted and get her brood nest well started. Install the other packages in the same manner in rapid succession. By doing the work smoothly and quietly and in the late evening, there will be little drifting. Do not use smoke in installing package bees. In about a week remove the cages and replace the combs.

Direct Release Method

Care for the packages and prepare the hives in the same manner as in the cage method. When hiving, however, remove only three or four combs from the middle and place them outside the hive.

If the weather is cool so that the bees do not fly, dump the contents of the package on the bottom board into the space left by the removal of the combs. Jar the package sharply, in a vertical manner, across the corner of the hive so as to bring all the bees to the bottom of the cage. Then invert the cage over the hive and shake the bees out of the feeding can opening into the hive, by short swinging motions. Do not allow

the package opening to extend beyond the edge of the hive because you may spill the bees on the ground around the hive. Jar the package once more on the ground to move the remaining bees to one of the corners of the package. Shake them into the hive. Spread the bees over the bottom board with a hive tool.

Dip the queen cage into the sugar solution which was left in the feeding can, and lower it into the hive over the loose bees close to one of the exposed combs. Remove the screen and allow the queen to run among the bees. Replace the combs that were removed, lowering them slowly and carefully to avoid injuring the queen and pressing down too much on the cluster of bees on the bottom board. Provide food and entrance as in the cage method, close the hive, and leave it undisturbed for several days.

If the weather is warm so that the bees are likely to fly freely, spray or sprinkle the bees in the packages with a thin sugar solution (one part sugar to two parts water) before dumping them into the hive. When thoroughly dampened (not wet) the bees are not inclined to fly.

The package may also be emptied by cutting out the side screen of the cage and shaking the bees out through this opening. Use only this direct release method when the queen is alone in the queen cage.

The beginner will fare better if he uses a combination of these two methods. He should release the bees directly and replace the frames; then place the queen cage between or over the middle frames of the hive with the screen side down, as described in the cage method. In this case the inner cover should be inverted to provide room for the cage.

If the beekeeper receives packages during an unusually cold spell, he should hold them a day or so until warmer weather, in a basement or a suitable room, keeping them supplied with all the stores they will consume. Package bees are very often received during a period in which occasional cold spells may occur, and the beekeeper must be prepared to care for the bees properly under any conditions.

The package may be made up by bees from the same colony as the queen which accompanies them, or the queen may already have been introduced and accepted. In such cases, she may be loose in the package instead of in a queen cage, and the usual precautions for queen introduction at the time of installation are not necessary.

If the queen is found dead in the cage, notify the shipper immediately. Close the package, keep it in a cool basement, and feed the bees well until a new queen arrives from the shipper. Then hive the package and introduce the queen in the cage.

About a week after the packages have been intalled, the keeper should check on the acceptance of queens. Open the hives and examine the combs for the presence of eggs. If eggs are found, no other combs need to be examined.

At this time the colony should be handled carefully, because any unusual disturbance such as a sudden opening of the hive or rough handling of the combs may cause the bees to "ball the queen". The term "balling" describes the peculiar actions of worker bees when a group of them attacks the queen, surrounding her on all sides, so that she is the center of a ball of workers which are biting and pulling at her legs, wings, and antennae.

The workers will usually kill a strange queen or a queen released from the cage while the old queen is still in the hive. Often if the bees ball their own queen, no harm is done to her. When the queen is balled the hive should immediately be covered and examined several days later to ascertain the results of the action of the bees.

Prominent Ohio Beekeeper Dies

Dr. Lawrence Hicks of Columbus, Ohio, biologist and conservationist died January 20. He owned and operated the Buckeye Apiaries. Dr. Hicks graduated from Otterbein College in 1928 and received his M.A. and Ph.D. degrees from the Ohio State University in 1929 and 1933. He served as a game ecologist with the Division of Conservation from 1929 to 1931 and as a forester and wild life conservationist with the U. S. Soil Conservation Service from 1934 to 1936. During recent years he has been devoting most of his time to beekeeping. Dr. Hicks is survived by his wife, daughter, son, and brother.

XUM

Comb honey supers stacked on the hives in one of Mr. Watkins' apiaries during a good honey flow.

Colony Management in Comb Honey Production

as told by S. JOAQUIN WATKINS
Grand Junction, Colorado

FIRST, BEFORE I give any false impressions, I would like to state that I have been producing comb honey for only six years. Until this season, I have been able to produce on a large scale from a fair to good crop of comb honey of quite acceptable quality. Fortunately, or else I wouldn't have been in the comb honey business, I purchased an entire outfit complete with "Know How" from Carl and Mabel Asmussen of Fruita, Colorado. They were successful producers of quality Colorado comb honey for many years and their advice was not only very helpful, but necessary.

Preparation for the season's honey crop should start the fall before. During the final "stripping" operation, the colonies are carefully checked for queens and weight. The hives that have been reduced to singles are boosted with either a heavy shallow extracting super of honey placed below the brood chamber or by a deep super of honey from a colony that has been operated for that purpose. Needless to say, the queenless hives and those having poor queens are eliminated and the combs taken to the warehouse to be used for divisions the next spring.

The former owners packed their yards, using the style that involved the making of banks out of straw and dirt long enough to hold 15 to 20 colonies and then after the colonies were placed

An apiary near some water which is important for bees, especially during very dry weather.

side by side as closely as possible, the tops were covered by a thick layer of straw and then dirt. The fronts were faced to the South and left uncovered. Since this area receives considerable sunshine in the winter time, the warming effect was quite beneficial. Although this method required less honey for wintering and the bees came through in good shape, it was abandoned due to the time required in the fall which necessitated my staying in Colorado later in the season (I formerly went to California for the winter).

The first steps for spring manipulation are identical with management practices for strained honey operations. As early as possible, the colonies are carefully checked for stores, this preliminary check being made by "hefting" the rear of each hive since the weather is too cold to permit inspection. The light hives are given from one to three heavy combs of honey depending upon their needs. Sirup feeders for stimulation are placed on from 50 to 75 per cent of the colonies during March.

At the first inspection the colonies are carefully graded as to strength and quality of the queen and marked accordingly. The below-standard queens are replaced by caged queens later in the spring. The best colonies are carefully watched for swarming. When the bees become strong and are about to reach swarming strength, the shallow food chamber which has been next to the bottom board, is placed on top of the brood nest thus giving an automatic swarm control measure. Those of exceptional strength are either divided by placing three or four combs of sealed brood and young bees plus a caged queen over a division board or their excess brood placed on weaker colonies. Swarming here doesn't appear to be the problem that it is in California during the prune or orange blossom flow.

The comb-honey supers are placed on the bees at the start of the major honey flow. A quick check for swarming propensity is made at this time and if cells are found, they are destroyed and the colony marked for further attention. There is no doubt that the best method of swarm control is the use of young queens, but in many instances here I find that second-year queens are

It is an advantage whenever possible to have apiaries that are easily accessible by truck.

the best producers. The colonies wintered in two brood chambers are cut down by taking the excess brood and honey away (care being taken to leave the frames containing the oldest brood with the hive) and stacking the extra supers of brood and honey on the weaker colonies. The colonies over division boards are either set off, the distance between the two hives being equalized, or if not up to strength, the brood is stacked on the stronger and the remaining nuc set in another p'ace leaving the field bees to return to the old set to bo'ster the parent colony. Also, the colonies are ventilated by placing half-inch blocks between the bottom board and the front corners of the brood chamber.

The ability to accurately gauge colony strength is one of the more important attributes required of a beekeeper operating for comb honey. This is important because it is essential to be able to judge which colonies are of sufficient strength to take a comb honey super and also, in the case of exceptional colonies, two supers. It is costly to try to force a below-standard colony to make comb honey. They usually refuse to go up into the super and block out their brood chamber.

The first super used is one containing "bait sections" which are carefully selected from unfinished sections of the previous year. These sections are placed in the two outside rows of the super, four to eight sections being used in each super depending upon the supply.

As a rule it seems to be almost impossible to produce comb honey over two brood chambers in this area. The bees refuse to come up into the super and will block out the full-depth brood chambers and swarm. In a few instances this has not proven to be the case and in one case a colony of three full-depth brood chambers produced a good crop of comb honey.

The second time around (in about ten days), the colonies are checked and from one to two additional supers are added, the old super being raised and the new one placed directly over the brood nest. If two are added the second one is placed on top. Those hives not working up to par are carefully inspected in order to determine the rea-

son. If it has swarmed or the queen failed, the comb honey super is removed and a super of drawn comb given (if needed).

As the season progresses the stands should have from one to perhaps five comb honey supers. In the manipulation the supers when replaced on the hive are switched end for end since bees tend to work the rear sections first. They are also rearranged, the more nearly completed supers being placed toward the top. The supers suspected of being finished or nearly finished are carefully inspected from the under side and if sufficiently finished, are placed on the top and removed with the aid of acid pads. A word of caution is needed here. In this area when removing comb honey, very little smoke should be used because the bees tend to pick the cappings if excited by smoke. If used properly, carbolic acid pads work very well in the removal of comb honey supers.

The finished supers are taken to the warehouse where they are scraped free of paraffin and then sorted. The partially capped sections are placed in a super, the more nearly completed sections being put in the outside rows, and then returned to the bees for finishing. This is necessary due to the fact that we not only have a slow honey flow, but a lull between cuttings of alfalfa. This necessitates the premature removal of many supers to avoid travel stain.

After keeping bees in three different states, I have come to the conclusion that management practices that are satisfactory for one locality do not necessarily work in another, so if you have better methods, use them.

HOW TO INTRODUCE QUEENS IN EARLY SPRING

as JULIUS LYSNE of Stockholm, Wisconsin, does it.

BEEKEEPERS OFTEN say that they experience a great deal of difficulty about queen introduction early in May and that it is difficult to make divisions. Much of the difficulty stems from the idea that the queen must be in the hive a long time before being released and that the bees must release the queen by eating out the candy in the cage.

Here is a sure method of making divisions or introducing queens late in April or early in May.

1. Prepare a screen board by covering the upper and lower surfaces surrounding the bee escape opening of the inner cover.

2. Place this screen board between the brood chamber and the food chamber. Do not waste time looking for the queen. This step should be taken about a week before the queens to be given to the divisions are expected to arrive. Be sure the upper chamber has an entrance.

3. Four days later examine each chamber for eggs. The chamber containing unhatched eggs, of course, contains the queen.

4. Remove two or three frames of sealed brood to the chamber containing no queen. Be sure that the combs removed do not have the queen.

5. Place the chamber with the queen on the bottom board and over this place the screen board.

6. Place the chamber containing two or three frames of sealed brood above this and put on the outer cover.

7. When the queens arrive, simply place one queen cage between two frames of sealed brood and adhering bees and leave for 36 hours.

8. After 36 hours release the queens and there will be no balling of these queens. The young bees will readily accept a queen. We now have a two-queen colony.

9. Permit the queen in the upper chamber to lay for at least a week and then the old queen may be killed and the screen board removed.

10. If it is desired to make divisions, the old queen may be set aside on a separate stand a week or ten days after the young queens begin to lay. If it is desired to operate the colony as a two-queen colony, confine the old queen to the lower chamber with an excluder. This system of queen introduction really works.

What is WRONG With Beekeepers?

by JOHN W. HOLZBERLEIN, Meeker, Colorado

(Talk given at the 1957 American Beekeeping Federation Meeting, Long Beach, Calif.)

NO ONE LIKES the job of telling people what is the matter with them, but once in a while it is a good thing to take a critical look at ourselves. I would much rather talk to the beekeepers who are **not** here. In the first place there would be a far greater audience. And in the second place there would be many more among them who **should** hear what I am about to tell you. When I look at this assemblage I see mostly people who should be telling **me** what is wrong with Holzberlein. The beekeepers who attend these national meetings really don't have much wrong with them. If they ever did have, somewhere along the line, they got wise to themselves and there were some changes made.

Now, I'm not trying to tell you what is wrong with beekeepers personally—there is not a group anywhere that could pass with higher standards than those of the beekeeping fraternity. As people, there are none finer.

The things I'm talking about are our production methods, our management methods, and some of our packing and marketing methods. There is plenty wrong there. And if you think there is not, then let me ask you why we continue to seek price support. And seeking it, and receiving it, why do we continue to accept it on a basis that will return us only a fraction of the cost of production. Too much of the honey produced each year costs the producer more per pound than he can ever hope to receive for it. And as agriculture becomes more specialized, as beekeeping territory becomes reduced, as insect pests increase, and consequently as honey crops become more uncertain the costs of production are going to continue to increase regardless of what the national economy does. What place can you name where honey flows are better now than they were 20 to 30 years ago? Not only are we now confronted by the ravages of insect pests on the crops on which our bees forage, but we have to guard against the very measures that the farmers use to control these pests for their own protection. There is plenty wrong, all right.

The subject is so large that I am not even going to try to touch on what is wrong with the overall industry, but just what is wrong with John Q. Beekeeper, himself, just you and me. Let us be serious now and take a good look at ourselves. I have summarized our faults as I see them, and will read them off to you—then we'll try to talk about each one a little and see if you agree with me. After that let's try to discover some remedies.

1. Beekeepers work too hard,—from the ears down.
2. Beekeepers work alone too much.
3. Beekeepers fail to attend meetings and support their organizations.
4. Beekeepers do not visit around enough.
5. Beekeepers are too reluctant to try new methods.
6. Beekeepers do not read and study bees enough.
7. We have failed to standardize our methods and our equipment and even our product.
8. We do not advertise enough.

There we have eight headings; they overlap some as we shall see, but each has its individual elements. And if you

don't think these are enough, you should hear those I got when I asked a few beekeepers' wives what they thought was wrong with us.

"Beekeepers work too hard," and I said "from the ears down" and that's just what I meant. And many of the other faults stem from this No. 1 fault. We **do** work too hard on the physical end of beekeeping. We don't relax and play enough. Day after day we use up all of our energy, and work until we are exhausted. This exhaustion is only physical at first, but if kept up too long it dulls our thinking. And too often all this hard work is done on some task that hired help or a machine might better be doing. It is true that a beekeeper's work often comes in bunches, and if it is done when it should be it all should be done at once. It looks like when bees want to swarm they all want to swarm; when they need moving, they all seem to need moving; when there are packages to shake, we just can't shake enough packages. And so it goes and we find ourselves played out before one job is done, with another job staring us in the face until the season is ended.

But careful planning will correct a lot of this. By doing a little more head work a lot of these rushes can be eased. And by employing more help at the proper time we may be able to spread our own energies over enough more time so that we can operate enough more colonies to more than pay for the extra help. Too often we think we cannot afford help when in reality we cannot afford to be without it.

"Beekeepers work alone too much." While the nature of our work makes this necessary in many cases, still the effect is there. In penitentiaries they keep the dangerous boys alone—if allowed to get together they get ideas. The saying, "Too long with the sheep", and it is a common Western one, might have been "Too long with the bees". It cannot help but be true that a man who works alone all day, day after day, is going to have his horizon narrowed and his outlook distorted. He fails to see that his problems are quite often very general problems, and could be more easily solved by mass action. We have all heard beekeepers talk who had lost bees by spray poison. To hear some of them tell it you would think that they alone had suffered this fate, and that the actions of all agriculture were aimed at them personally. There is no question but what it is good for us to be able to share our problems.

As an example, I'd like to tell you a story of something that happened while we lived at Grand Valley. This is cloudburst country and hard summer showers often put the creeks out of their banks. We had a German neighbor who lived at the mouth of one of these creeks. While working my bees up in this area one afternoon we had an especially heavy shower and the creek went wild. In 30 minutes it was a torrent. Fences, trees, and even buildings were swept before it. In another 30 minutes the water had receded and bee work done for the afternoon, I started home. The road was barely passable and I observed the damage as I went down the creek. When I got down to August's place at the mouth of the canyon he was sitting on the fence looking as if he had lost his last friend. I stopped and commented on the flood and inquired about the damage he had suffered. He had lost a brooder house and several hundred young chickens, all swept down the creek. He felt that he was ruined. But when I told him that Lars Hansen had lost a registered sow and her eight half grown pigs, and that two other farmers up above had had their alfalfa fields completely covered with mud and rocks he seemed to brighten. "Vell" he commented, "it's not so bad as I t'ought." And that's the way we are.

"Beekeepers fail to attend meetings and support their organizations". This is one of our most serious weaknesses for we live in a highly competitive age, and most of the time we are competing with groups. If we continue to compete as individuals we cannot help but lose. Where do we compete? Why just about everywhere. We compete for this labor we mentioned. We compete for favorable recognition of the government. We compete for the favorable attitude of the other branches of agriculture. Most important of all we compete for the consumers' dollar in the markets where our basic product, honey, meets the final test. In nearly every instance mentioned we compete with

XUM

some highly organized group. We don't even buy our gasoline from a man with one oil well and one filling station. And yet think of the beekeepers you know who do not belong to any organization. We have a National organization worthy of the whole hearted support of all of us. But even those of us who do belong often support it half-heartedly, both in money and in time spent. Why? Don't ask me, I don't know.

For 20 years I have looked for an answer to the organizational problems of beekeepers. I have worked in several of these organizations. But why they do not flourish I cannot say. We are all smart enough to know that we need them. We are numerous enough and widespread enough to make them financially successful without its being burdensome to any individual, and yet for the most part we drift half-heartedly along. Perhaps we are still hoping that the other fellow will put his money in first; as the Mexicans say, "quien sabe".

"Beekeepers do not visit around enough." This ties in with a lot of what I have already said. But since the nature of our work **does** often compel us to work alone, then we should more than ever spend a part of our spare time in visiting around. First, of course, we should attend the meetings that are prepared for our enlightenment and entertainment. We should also visit the colleges that are doing research work in our behalf. In not one of them have I ever found the men unwilling to take the time to show us around, to explain their projects and give us a working application of their findings. If we find fault with the lack of technical work done on beekeeping problems at our colleges and universities let me tell you it is our lack of interest in what **is** being done that is one of the main reasons why there isn't more done.

But most of all I think we should visit them in their apiaries, their extracting plants and in their living rooms. There is many an ingenious beekeeping practice in use today that never gets beyond the originator's back yard just because he didn't think it was worth mentioning, and no one came along and observed it for himself. When we visit another beekeeper we nearly always find something being done better than we have been doing it ourselves. And failing to find this there is still the chance that we will see some mistake being made that shows up worse in his outfit, and we can then avoid making it in the future ourselves.

I like to think of a visit paid to our honey house by a neighbor beekeeper from Utah. He came to observe and learn for himself, no doubt, and if he did, he was surely welcome to it, and that would be for him to say. But the interesting part is that before he left he gave us some interesting pointers that we have since put into practice that have improved our operation, and which we might never have thought of without his suggestions. Proof of this need for visiting is manifested at every meeting.

"Beekeepers are too reluctant to try new methods." By being guilty of all the foregoing faults we may never learn of any new methods. But don't you know that it is lots easier to just keep on doing things the old way. It is hard to break old habits, even when we know that a new method of doing something is going to be better. We all know of a few bee outfits that are being run just about like the present owner's grandfather ran them, and dozens of them just like Dad did. There may be several reasons for this. Dad might have been a whale of a good beekeeper in his time.

Another reason is that a lot of our equipment may become obsolete though it never wears out. It has little trade-in value, so we just keep on using it year after year, though its inefficiency may cost us the price of the new equipment each year we use it. It is often next to impossible for us to change some of our methods without changing some of our equipment. The most valuable thing any of us have is our time. We are each endowed with 24 hours of it every day. It is how we use it, how we save it, and how we spend it that determines how we progress. We live in a rapidly changing world and if we do not change our methods to keep pace with the times, and take advantage of the labor-saving devices made available to us we are soon left behind.

"Beekeepers do not read about and study their bees enough." There is a rich store of information in the books on beekeeping, and the monthly magazines have been doing a very good job

of keeping us informed on what is new in the field. By failing to read these books and neglecting the periodicals we further limit our scope. Fortunately, many beekeepers who do work alone much of the time are voracious readers, and in that way keep up with what is going on in the industry. Through wide reading we may keep up with the times, and stimulate our thinking. One limitation is that there is so much of valuable bee knowledge that does not get into the literature. Then, too, many of the wonders, and much of the charm of bee life cannot be put on paper. For this reason we should all allocate some time to the study of our colonies, difficult as it may be to find this time. Only close observation of the bees under different stimuli can give us the full knowledge of bee behavior that makes our work more interesting as well as making it easier to show a profit. In this phase the hobbyist has a decided advantage over the commercial man who seldom feels that he has time to stop and observe some unusual activity in the hive. In this respect the man who began his beekeeping career as a backlotter and gradually worked up to a full time business often has the better background. But it is surprising how many men who attempt to make a living from bees know little more than that the little bugs in those boxes just sting, swarm, and make honey.

The literature of beekeeping is very broad and ancient. Much of it is quite entertaining, not that all of it is intended to be so, for much of this entertainment comes from reading a lot of stuff written by people who didn't know too much about their subject. Perhaps no agricultural science has more plain hokum written about it than the art of beekeeping. Some of it has been so thoroughly accepted that one may be hard put to separate fact from fiction. But this need not make it less interesting. On the contrary it often gives us something against which to check our own observations. Of course, this type of information can be dangerous for beginners, but then I am not talking to a group of beginners. What I think we need is some stimulative thought, and I do not believe we can get as much for our time and money in any other manner as we can by reading. Bee lore is old; it is just about as old as the history of man. References to bees in man's primitive writings go back over 40 centuries. In all these years man has looked upon the bee with respect, partly no doubt due to the sharpness of her stinger.

Numerous mention is made to her and her unique product, honey, in the Bible. Some 700 years before Christ in Exodus 3; 8 the Land of Promise is described as "A land flowing with milk and honey". Then 500 years before Christ in Judges 14; 18 the question is asked, "What is sweeter than honey"? Again 350 years before Christ in Proverbs 24; 13 "My son, eat thou honey, because it is good". And so through literature we find reference to honey and the bees who make it, right down to one of my favorites from a modern author: Elbert Hubbard says, "No good, sensible, working bee listens to the advice of a bedbug on the subject of business". And so we find that the bee in literature as well as the literature about bees can furnish many relaxing and informative hours. History may record that this was the last generation that learned to read. With TV what it is, our grandchildren may lose the art altogether. So right now might be a good time to make up our minds as to whether we want Langstroth or Presley.

"Our failure to standardize." Some may not regard this as a serious fault, perhaps not as a fault at all, but it surely is one thing that holds us back. We are individualists by necessity, and asking for standardization of operations may be asking too much. But until we do standardize our operations we cannot standardize our equipment, and until we standardize our equipment and use it generally, we cannot expect to find it on the market at a price we can afford to pay. Quite a few attempts have been made recently to build labor-saving equipment, but it all costs too much. And as long as we have four different hive widths, and three or more different super depths, not to mention the other variations in style and design, we cannot expect to go out and buy a completely integrated, mechanically operating bee unit. It is true that we are still in the experimental stage, but we are already at least 30 years behind most other branches of agriculture. We are still plowing with two mules and a walking plow.

(Continued on page 184)

XUM

A Beginner Makes Good

by DICK GERATHY
Detroit, Michigan

IN JUNE 1951, we moved from the heart of town to the suburbs. You can imagine my surprise when I found that our neighbor had three colonies of bees right against our lot line fence. Every day that he was out there, I would be out there watching him carefully. I soon wanted bees of my own.

One day on my way home from school I saw a disheartening sight. About ten kids were throwing everything available at a swarm of bees on a fence. I ran home and came back with a shopping bag and shoveled the bees into it. When I got home I fashioned a crude box hive and dumped the bees into it. The bees stayed for three days and then flew away. That was the beginning of an adventure I will never give up.

My big chance came when I saw an advertisement in a local paper, advertising bees for $12.00 a hive. I persuaded my dad to get me a colony. Three weeks later I was called to come and get a swarm which proved to be my only producer. I ended the season with two hives and one super of comb honey, which I sold in three days.

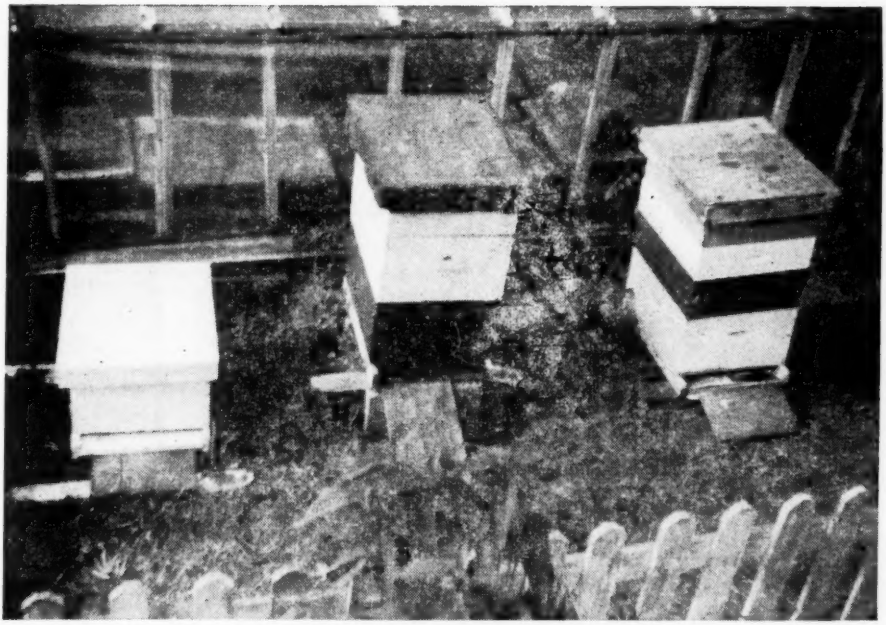
Through the winter I read all the books on bees that I could get. I sent away for stacks of literature and catalogs. The two hives wintered well without any packing or protection. Spring came and I worked busily building up the hives for the flow. Before I knew it the flow was in full swing and I had three supers this time, but I lost one because of a foolish mistake. In the process of wintering the bees the winter before, I had cut a notch in the rim of the inner cover to let out the excess moisture. You guessed it, they cleaned out a whole super before I could plug the hole.

I decided to enter the Michigan State Fair. I didn't do so well, my observation hive taking seventh premium. Winter passed and spring came and a new season with it. Our neighbor still had his bees and on the day that I was to graduate from grade school he presented me with a fine five-pound swarm. It prospered and when the late flow began it was occupying two bodies. Again I entered the fair and this time my observation hive took fourth premium. Through the winter I passed my Boy Scout Beekeeping merit Badge.

When 1956 came I was determined to make this my best year. Well, I started out by killing one of the colonies unintentionally. There was a colony of ants living in the inner cover. I sprayed them with undiluted chlordane without first blocking the escape hole. The bees got at the stuff and spread it all through the hive, destroying themselves. I still had three hives and one of them was weak.

I came home from school one day and there was a message to go get a swarm over on the other side of the city. I put my gear in a boy scout pack and with my pack on my back I started out on my bicycle. The swarm was a small one weighing two pounds and clustered on a lot line fence. The woman paid me $5.00 to take it away. I had started out at four o'clock and got home after ten. It was a 20-mile round trip.

Two days later I got another call and started out again. The swarm was on the ground and mingled with the grass. I found the queen and caged her. Then



Dick Gerathy's three-colony apiary has furnished him with relaxation and enjoyment as well as profit.

I tied the cage to a stick and stood the stick up in the middle of the swarm and left the bees to cluster. I carefully put the stick and cluster into an outboard motor bag which was canvas. It was 96 that day and I was sure glad to get out of that bee suit. I pedaled home and put the bees out behind the garage to cool off for the night. The next morning I found the queen and caged her. I then united the swarm with the weak colony. I sold the queen from the swarm and I now had three strong colonies. The honey flow was in progress and I was doing pretty well. I began to think about the Michigan State Fair again. I stocked the observation hive and packed some chunk honey. I didn't have the minimum of 50 pounds so I entered it in the canned foods division. Out of 14 observation hives entered by commercial beemen I took second premium and $16.00. My chunk honey in the canned foods division took another second and $2.00. I got two more supers of late and very dark comb honey.

I have never packed a colony for winter and I have never had a loss. I have contrived an extractor out of a tin pail and by swinging it over my head in circles, I have extracted over 30 pounds of light honey from unfinished and cull section.

"Can you tell if that's enough smoke?"

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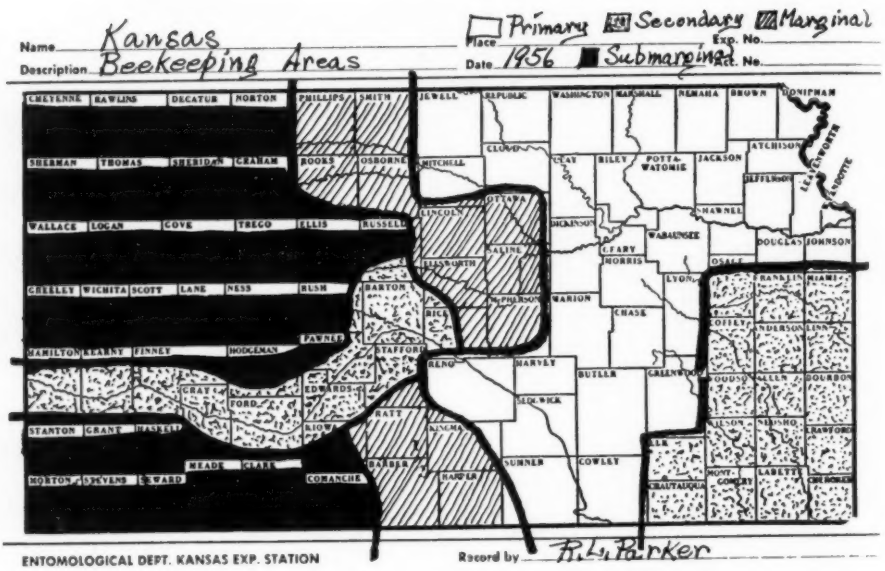
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WALLACE LOGAN GOVE TREGO ELLIS RUSSELL LINCOLN OTTOWA JEFFERSON
WABAUNSEE SHAWNEE DICKINSON
GREELEY WICHITA SCOTT LANE NESS RUSH BARTON ELLSWORTH SALINE MORRIS OSAGE DOUGLAS JOHNSON
RICE PHERSON MARION LYON FRANKLIN MIAMI
CHASE
HAMILTON KEARNY FINNEY HODGEMAN PAWNEE STAFFORD RENO HARVEY BUTLER GREENWOOD COFFEY ANDERSON LINN
EDWARDS
GRAY FORD KIOWA PRATT SEDGWICK ALLEN BOURBON
STANTON GRANT HASKELL
MEADE CLARK BARBER SUMNER COWLEY CRAWFORD
MORTON STEVENS SEWARD COMANCHE HARPER MONT-GOMERY LABETTE CHEROKEE
CHAUTAUQUA
ENTOMOLOGICAL DEPT. KANSAS EXP. STATION
Record by R. L. Parker

Beekeeping in Kansas

By R. L. PARKER, Professor of Apiculture
Kansas State College, Manhattan, Kans.

KANSAS, THE wheat state of the United States, is also an alfalfa seed and honey production state. In 1955 there were 24,360,000 pounds of clean alfalfa seed, principally Buffalo, produced in Kansas and the second largest amount in the nation; California being first. This same year, 1,505,000 pounds of surplus honey were produced by 43,000 colonies of honeybees or an average production per colony of 35 pounds. There were 29,000 pounds of beeswax produced.*

The state gradually rises from 740 and 900 feet in the southeast along the Oklahoma and Missouri borders to 4,139 feet in Wallace County near the Colorado border. There are no mountains in Kansas and it is one of the Great Plains states. The average yearly rainfall in the southeast is 40 inches and the rainfall decreases to 30 inches in the vicinity of Salina and Wichita, an imaginary line of the western border of the eastern third of the state; to 20 inches at about the eastern border of the western third of the state, and to 15 inches in the two-county area where the Arkansas River enters the state from Colorado. Irrigation is actively practiced in the western third of the state where water is available. In most areas except the eastern fourth of the state there is adequate limestone in the soil for growing alfalfa.

Brood rearing begins about February 15 and continues until about October 15. During the early spring period before the soft maples and elms bloom,

* U.S.D.A. Agricultural Marketing Service, Crop Production Board, January, 1956.

pollen is needed for brood rearing and should be fed to colonies about March 1 to continue this essential spring activity to produce the large colony population in anticipation of the first major nectar flow.

Pollen yielding plants begin with the soft maples and elms early in March followed by dandelion and wild plum and later, the cottonwood. In April other nectar and pollen yielding plants bloom such as willows, boxelder, early fruit bloom, redbud, tartarian honeysuckles, black locust, late fruit bloom, and honey locust to give a somewhat continuous source of food until the coming of the first major nectar flow from white clover or yellow sweet clover in May.

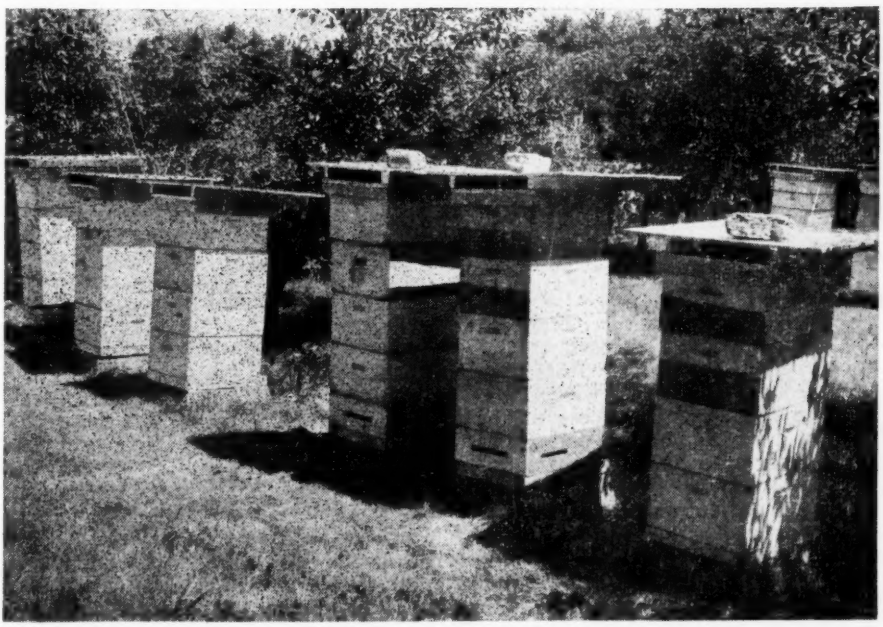
The major sources of nectar for surplus honey crop production begin with **white clover** in the eastern two or three tiers of counties which, in early May sometimes produces a crop when weather conditions are favorable. The next nectar-secreting plant of importance is the **yellow sweet clover** which grows in the eastern two-thirds of the state and blooms at about the same time as white clover. Many beekeepers use this nectar flow to finish building the colony population instead of having the peak of population occur just before this time.

The **white sweet clover** nectar flow overlaps the end of yellow sweet clover flow, beginning during the latter part of May or in early June and may persist for four to eight weeks when there are plenty of showers and the temperature does not go over 100 degrees F.

The **alfalfa** nectar flow in the central and southwestern part of the state from the second cropping begins about July 25 and may continue to the latter part of August. In the lower Arkansas River Valley in Reno, Sedgwick, Cowley, and Sumner Counties, a mixed nectar flow from alfalfa and **smartweed** takes place in mid-September from the third cropping of alfalfa. This situation also occurs in North Central Kansas if showers have prevailed during July and August. The late nectar flow from **Spanish needle** occurs in September in the three eastern tiers of counties in Southeastern Kansas and south of Kansas City.*

* For more specific information about nectar and pollen plants see Bulletin No. 357, "Bee Culture in Kansas," Kansas Agricultural Exp. Station, Manhattan.

A portion of K.S.C. apiary—standard hives and pollen traps under two colonies.—Photo by R. L. Parker.



Central and Western Kansas is primarily a wheat-producing area. The rotation of wheat, sorghum, and summer fallow, as practiced in the western half of the state, is not conducive to honey production. In beef cattle production areas where legumes are used in pastures, beekeeping is favorable.

The accompanying map of Kansas shows that a little more than one-half of the area of the state is adaptable for honey production. Commercial producers are located in the southeastern and western secondary areas as well as in the primary area of honey production. For the most part, the commercial producers in the north central area market through honey marketing groups. Those in the south central area pack their crop and market it locally. A few beekeepers produce commercial lots of section comb honey which is sold locally. Others have abandoned the production of section comb honey because a suitable price could not be obtained. One commercial producer operates self-service roadside honey stands with good success.

Kansas is a honey importing state but could well be an exporting state if there were more commercial beekeepers. In the ten years since World War II the number of colonies in the state has decreased from 64,000 to 43,000 due to the reduction of the number of colonies operated by one person and the difficulty of obtaining suitable labor at a reasonable cost during the production season.

Pollination of crops as such is not actively practiced in the state.

At the present time there are two serious threats to adequate plant growth in two of the principal nectar-secreting plants, the sweet clovers and alfalfa. The sweet clover weevil is not serious during hot, dry years such as have occurred the past four years. The spotted alfalfa aphid is a new arrival in 1955 and its potential possible damage is great in that it destroys new alfalfa plantings and reduces markedly plant growth in established fields. There is the possible danger that control measures will poison the honeydew on the leaves which honeybees may collect in the case of a shortage of nectar in the flowers due to aphid attack.

The apiary inspection service is administered by the Kansas Entomological Commission at Topeka and Manhattan, while the research and the resident teaching activities are located at Kansas State College, Manhattan. Beginning, advanced, and graduate research courses are taught there. Research in the experiment station is at present being conducted on wintering problems, colony increase, pollen influence upon colony activity and honey production, the spotted alfalfa aphid in relation to honey production from alfalfa, and the use of antibiotics in the control of American foulbrood.

There are four local beekeepers' associations in the eastern half of the state and the Kansas State Beekeepers' Association which holds quarterly meetings in various parts of the state.

A Letter to Gleanings' Readers

WE HAVE been very pleased to have as our guest in Australia, Frank E. Todd, United States Department of Agriculture research officer, from Tucson, Arizona. Frank was widely welcomed by beekeepers, officers of the Department of Agriculture and honey processing companies.

It is a pleasure to have been associated with this fine ambassador for the American beekeeping industry. Everywhere he travelled, and believe me it was extensive, Frank was able to pass on much valuable information. Knowing Frank's intense curiosity and ability to learn we know that he, too, has benefited greatly.

We take pride in thinking that an interesting story can be told to American beekeepers which may influence a greater exchange of visitors between these two great honey-producing countries.

May I suggest that anyone connected with the beekeeping industry, interested in visiting Australia, contact me at Euroa, Victoria, and I shall be happy to assist with their visiting schedule.—Alan M. Frost, Graham St., Euroa, Victoria, Australia.

Argentine Ants

One Way to Combat Them

as told by WILLIAM HAHMAN, Ormond Beach, Florida

THE ARGENTINE ANT found in Florida is slightly smaller than the common big black ant found in the northern States. It is of a reddish brown color. It is nocturnal in its habits and is a serious pest to beekeepers, where it is found. Its depredations occur on chilly nights when bees naturally cluster in the center of the hive.

It is my impression that they do not enter the beehive in great numbers, but a few scouts investigate the possibilities of a strong invasion. They go back home and report. Their invasion is of course made into the weaker colonies. They seem to be careful not to make trouble until they have gradually taken possession of one side of the hive, which the bees tolerate. When they have built up sufficient strength of numbers, they seem to go about the business of attacking the colony by first of all killing the queen.

The ants are armed with strong nipping pinchers for jaws, and the bees are no match against so savage an adversary. The attacking ants will nip off a leg or part of an antenna. Bees so crippled rush out of doors and the presence of ants can be determined by the beekeeper finding a number of bees on the ground in front of the hive, running around in circles attempting to get rid of their handicap.

In cases of outapiaries, where the hives are not looked over for some long periods of time, the ants can utterly destroy a colony in short order, then wax moths enter and finish the work of destruction.

I will explain what steps I have taken to guard against the invasion of Argentine ants, which, with modifications may be utilized for larger apiaries than mine. I am an old time beekeeper, having kept bees for over 60 years and now keep only two or three colonies.

Last summer I had two very strong colonies, and one not so strong with an old queen. I thought I was guarding them all by a plan which is described following.

I cleared a small piece of ground, leveled, and freed from weeds and grass. I then placed four bricks slightly dug into the ground, spaced center to center the dimensions of a hive. I then built a little platform the length and width of a hive and about six inches high. I bought a number of small glass desert cups at the "5 and 10", set them on the bricks, set the platform with their posts in the cups and filled the cups with crank case oil that I got from my garage man. The ants could not cross over the oil and climb up and enter the hive.

The scheme had one fault: When we had heavy rains, the water would run into the cups and the oil would flow out. Then when the sun dried up the water in the cups they had to be refilled with oil.

I have now devised a scheme to prevent this washing out of the oil. The super-markets here sell chicken pot pies, put up in little aluminum cups pressed out of a sheet of metal. These cups can be expanded at the edge circumference so as to be larger than the top of the glass cups. I then saw a cut diagonally half way through the posts of my stands. I then cut out a section of the aluminum cups in such a way that they can be slipped into the saw cuts on the legs of the stands to form a sort of umbrella which prevents the rain from entering the cups. The aluminum cups can easily be removed for inspection of the oil cups and for filling the cups with oil.

I have learned recently that the entrance of the ants into a hive can be prevented by sprinkling chlordane powder all around a hive. But the trouble is, that when we have a shower, the chlordane is all washed away and the guard has to be renewed. This is a rather expensive preventive measure.

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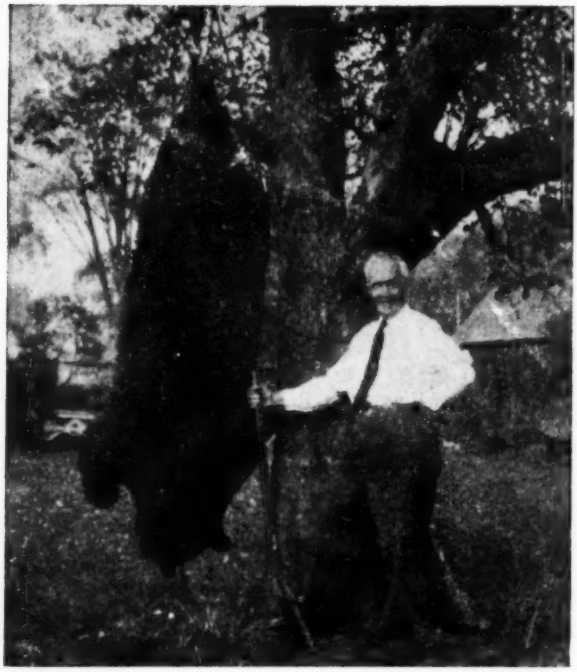


E. A. Byer standing beside the 425-pound bear he shot in his yard recently.

Old Bruin Meets His Doom

A Novel Way to Kill a Bear

by E. A. BYER, Markham, Ontario

SINCE THE honey crops here in central and western Ontario have been very poor for a number of years, with prospects none too bright for the future, many of the commercial beekeepers have had to look elsewhere for bee pasture, in order to stay in business. A few have gone to the Canadian west while others have moved to northern or eastern Ontario where there seems to be an abundance of flora and where fair crops of honey have been quite consistent. We chose eastern Ontario, and were it not for the depredation of Mr. Bruin we would be quite satisfied.

During the past six years we have killed ten bear. Seven of these I have shot during the past three years and they seem to be getting more plentiful each year.

Since we knew nothing whatever about bear here at Markham we had to learn by bitter experience, and although we still lose some colonies we now feel almost certain of getting Mr. Bear when we go after him. At first we sat in cars, hid in a corner of a yard or sat 15 feet or so up in trees, but never did we see a bear, let alone get a shot at one.

We also set traps and were successful in getting two this way but traps are hard to set and very dangerous as other animals and even humans sometimes get caught. Even though we had signs up a small lad got in one of ours and was lucky to escape without a broken leg.

Since we use a number of four colony winter cases we decided to pile these up three high, taking enough boards off one side to leave an opening

of approximately 10 inches after the cover is in place, through which to shoot. Also, since bear nearly always come after dark a light of some kind is necessary, so we use a sealed beam headlight with both beams hooked up, a six-volt battery and a switch to turn on the light.

Fastened to the head light is a ½ x 1½ x 8 or 10-inch piece of wood through which a nail is driven into a board at the bottom of the opening in the case. In this way the light can be swivelled on any part of the apiary one wishes.

Usually the bear come early in the evening, as six of the seven were shot before 9:30 P.M. However, the one pictured here did not come until 2:00 A.M. and I had given up all hope of seeing it that night. After midnight I curled up in the case and had a sleep but luckily woke up before 2 o'clock. Seconds later I heard a couple of sniffs and then he started to eat some combs of honey from the colony he destroyed the previous night and which were on the ground close to the case. He sounded very much like a hog eating from a trough, and as he was too close to be seen, I was not sure for a while, if it was a bear or not. He was within two feet of me for five or ten minutes (it seemed an hour) before he went back of the case, where I could hear him licking his lips, either of honey or in anticipation of feeding on me.

He then started down through the apiary and what a big brute he was—almost twice as large as any I had previously seen.

The second, third, and fourth shots each knocked him down but he still had enough pep to crawl six or eight rods before giving up the ghost.

He weighed 425 pounds, was eight feet long from nose to hind feet and measured 16 inches across skull from ear to ear.

Acarine Disease Found in India

by A. S. MICHAEL, USDA, Agricultural Research Service, Entomology Research Branch, Beltsville, Maryland

IN NOVEMBER 1956, a sample of dead **Apis indica** bees was received at Beltsville from Sardar Singh, entomologist at the Government Agricultural College in the Punjab, India. Dr. Singh, uncertain as to the cause of their death, requested a diagnosis as he was highly suspicious that a serious disease was present because of the large numbers of bees and colonies involved.

Recognizing the ever-present danger of acarine disease, against which we had very early (1922) and very fortunately taken restrictive legislative measures by limiting the importation of foreign bees, we made an examination for this disease. This examination revealed large numbers of the mite **Acarapis woodi** present in the anterior thoracic tracheae of these bees. Our identification was confirmed by a world authority on mites, E. W. Baker, of the USDA Entomology Research Branch.

To our knowledge this is the first report of this disease occurring in India and apparently is the first record in **Apis indica.** Dr. Singh and his coworkers are extremely disturbed over the finding of this disease in their bees and are taking steps to control it.

Acarine disease has now been reported from at least three continents—Europe, South America, and Asia. This indicates a gradual spread from its initial location in Europe to other areas of the world. Modern rapid transportation is probably responsible for much of this spread. It is therefore imperative that a greater effort be made to keep acarine disease from entering the United States. Judging from the experience of our fellow beekeepers in Europe, should acarine disease be introduced here, the impact upon the beekeeping industry could be devastating.

Owing to the insidious nature of the disease State and Federal agencies concerned with honeybees should take every precaution to detect any outbreak at the earliest possible moment. Should such an outbreak of acarine disease result from illegal entry of bees from a foreign country, the Federal Government would have to take measures to trace its source so that it could be stamped out as rapidly as possible, and also to prosecute the responsible individuals under the terms of the Act of Congress of 1922 which prohibits the importation of foreign bees.

XUM

Queen Rearing for the amateur beekeeper

H. H. LAIDLAW,
University of California, Davis

III Mating the Queens

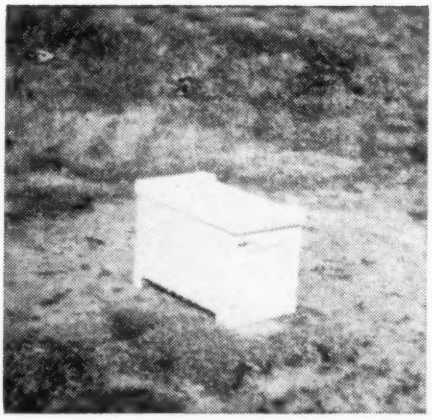
TEN DAYS after the prepared cells were given to the cell builder they must be removed and put into individual colonies from which the virgins mate. Commercial queen breeders use special small colonies for this purpose. These small hives, "nuclei" boxes, are rather handy to have and the amateur could profit from their use. They are not essential, however, for mating queens. Queens can be mated from full colonies, or from nuclei made on top of full colonies by raising brood, bees, and honey above an inner cover and providing an entrance to the rear of the nucleus.

When the cells are to be used for requeening colonies it is easiest to destroy the old queens a day or so before the cells are "ripe" (ten days from grafting), and later give each colony one cell when the grafted cells are removed from the cell builder. While removing the old queen the bees should be shaken lightly from the combs and the combs examined for indigenous queen cells, which should be destroyed. Fifteen days after the cells are distributed the new queens should be laying well. Some loss should be expected and this can be offset by mating a few extra queens.

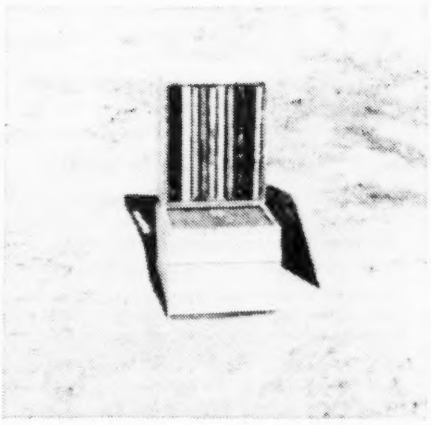
One of the most satisfactory ways to get extra queens mated and laying is by use of nuclei above the main colony. A standard body is set on the inner cover (the center hole in the inner cover is closed) and about three frames of bees, one of sealed brood, and two of honey (the three frames of bees to cover the brood and honey and are **not** additional frames) are raised from the colony below into the body above. If a feeder is available the nucleus should be fed. An entrance should be provided to the rear. This might be an auger hole, a notch in the inner cover rim, or merely the rear end of the hive body raised on the inner cover by wedges. The nuclei should be established at the same time the colonies are dequeened, and tney also receive cells when the full colonies do.

The ripe queen cells should be handled with care. When the cells are removed from the cell builder the bees should be brushed off of them and not shaken off because shaking will sometimes injure the pupal queens' wings. The cells can be cut from the cell bar with a warm knife and laid carefully in a small carrying box for transportation to the colonies, and when given to the co'onies they should be pressed firmly but carefully into the middle of a comb near the center of the cluster of bees.

Record-keeping is essential to large queen-rearing operations and can add to the pleasure of rearing few queens though the records need not be elaborate. When the cells are grafted the "take-out" date (ten days from grafting) can be written on the cell builder together with the breeder number. The same date is written on the colonies re-



Standard frame nucleus box.



Nucleus above main colony (commonly called "board divide").

queened or the nuclei into which the cells are put. This single record indicates both the age and stock of the queen. The clipping of queens soon after they begin to lay identifies the queens and also prevents losing the bees as well as the queens if the colonies should swarm.

The introduction of cells to large colonies and nuclei is a relatively simple matter and they are usually accepted by the bees unless there is no nectar flow at all. In the latter case it is well to feed the colony for a day before giving it a cell and continue feeding for a day or two afterwards.

The introduction of laying queens is also relatively easy during a honey flow, but may be very difficult in a dearth. Feeding the colony being requeened for a day before the queen is given to it and for several days thereafter will greatly enhance the probability of success if no nectar is being gathered. The quickest way to introduce a laying queen from a nucleus is to sprinkle the bees and combs of the queenless colony with sugar syrup and then sprinkle the young queen and her bees and set the nucleus into the colony. This should not be done, of course, if there is great danger of robbing, but ordinarily it is a safe and practical method. A second method is to cage the queen alone in a mailing cage or any type of introducing cage and confine her to the cage by filling the entrance hole with queen cage candy. The caged queen is then pushed down between two combs in such a way the cage is horizontal and the bees have access to the screen and to the entrance hole.

Queen cage candy can be made by stirring powdered sugar into a spoonful of honey (from the colony to be requeened or from some other **disease-free** colony) and kneading more sugar into the candy until it is firm.

It can be seen that the rearing of good queens is not too difficult; and the pleasure of producing queens for one's own use is commensurate with any other beekeeping activity.

Wide Alighting Boards Save Bees

by J. ALLEN SMITH, Haines City, Florida

WE HAD practically the same experience mentioned by Leslie Frint, of Beaumont, Texas, when hives were mounted on platforms supported by drums. The bees couldn't make it to the entrances (Gleanings, January). Our drums sat in water. Bees drowned.

We used 18-inch long boards, 12-inches wides, tacking strips crosswise, so the bees would enter the entrance on each side and hold the wide boards flush with the front of the hive entrance. All bees made it and they are very satisfactory. No trouble with ants, bears, or stragglers.

XUM

Editorials

Bees Wintering Quite Well

REPORTS RECEIVED thus far from different parts of the country indicate good wintering where bees have ample stores. The winter has been quite cold and this condition appears to be more favorable for bees than changeable weather. A mild winter usually causes abnormal brood rearing, which results in a heavy consumption of stores.

It seems essential, however, that bees wintered out of doors in the North have at least one good cleansing flight during mid-winter. We cannot be sure that all bees in the North had such a flight but they did in some states.

Our Industry Needs Standardization and Simplification

WHEN WE MENTION the need of standardization in beekeeping we may be treading on dangerous ground. Beekeepers who have become accustomed to using certain types of hives and methods of apiary management are likely to continue using them.

However, during the past 50 years there has been a gradual trend towards simplification of bee equipment and methods of managing bees. For example, the eight-frame hive at one time used quite extensively, especially for the production of section comb honey is now becoming obsolete. It is not listed in present day bee supply catalogs.

John Holzberlein in his article, "What's Wrong with Beekeepers", page 146 this issue, refers to the different sizes and depths of supers, and the inference is that they should be standardized.

Why is it necessary to have three depths of shallow supers (there being only a fraction of an inch difference between the depths of the two larger sizes), when one depth super could meet the requirements?

When it comes to methods of management, standardization seems hopeless. Obviously, different regions or localities require different types of hive manipulation, or so it is thought by some beekeepers.

The objective in managing bees is, or ought to be, to secure the maximum crop of honey and wax at the minimum of expense.

Bees need food, comb space, and protection from the elements. These three major requirements can surely be supplied at the minimum of expense by standardizing beekeeping equipment and simplifying hive manipulation and apiary management. Some beekeepers seem to think they have to follow a certain type of hive manipulation and apiary management just because their fathers before them did. They are like the law of the Medes and Persians that changeth not.

If commercial beekeepers, also part time beekeepers who operate out-apiaries, would take time to work out a simplified system of apiary management that would eliminate all unnecessary labor and truck mileage, also the use of costly special-made equipment, they might be surprised at the reduction in the cost per pound of producing honey.

During these days of high costs of labor and material, beekeepers must reduce operating expense to remain in business and make even a living margin of profit.

Queen Substance

THIS IS COMPARATIVELY new in the realm of beekeeping and may account for some of the mysteries of the hive. Beekeepers are frequently puzzled over the seemingly peculiar behavior of bees at times.

The following, taken from a reprint of the writings of Dr. C. G. Butler of Rothamsdam Experimental Station, England, will be of interest to beekeepers everywhere:

"C. G. Butler has shown that queen honeybees secrete on all parts of their bodies a substance ('queen substance') which the household bees of their colonies urgently seek. This substance is obtained by young worker bees, who happen to be near to the queen at any given time, by licking her body. Many of the bees that have just obtained a supply directly from the queen move rapidly over the combs, offering food which contains 'queen substance' to other members of their colony. In this way 'queen substance' becomes widely shared amongst the members of a colony. As long as worker bees obtain sufficient 'queen substance' they remain inhibited from building emergency or supersedure queen cells, and from tolerating the presence of eggs or larvae in swarm queen cell cups (or artificial queen cell cups).

"The 'queen substance' of virgin queens appears to differ from that of mated laying queens, but it is probable that all virgin queens produce one kind of substance and that all mated queens produce another kind. Results of experiments indicate that it is appreciation of the differences between the 'queen substances' of virgin and mated, laying queens, rather than any difference in their behavior, which enables worker honeybees to distinguish between them.

"It seems probable that the readily demonstrable craving of workers for 'queen substance' is one of the most important factors, if not the most important, in the maintenance of colony cohesion, not only in honeybees but also in the ants and termites. It is also very likely that it plays an important part in swarming; a temporary shortage of supply or, more probably, a breakdown in its distribution, leading to the toleration of eggs and larvae in queen cell cups."

It seems possible that a further study of "queen substance" and its effect on the morale and behavior of a colony of bees, may open up new avenues of approach to the solution of some problems that baffle us at present.

Honey in Surgery

THE FOLLOWING paragraphs are taken from the book "Honey and Health" by the late Dr. Bodog F. Beck of New York City:

"Honey applied to ulcerated surfaces has a unique function. Soon after its application a profuse and intense centrifugal flow of lymph is noticeable and the entire torpid surface of the wound becomes soaked in fluid. This leucocytic lymph collection which honey produces has not only a bactericidal powder but the rinsing function on the free-flowing liquid will greatly contribute to the cleansing of the wounds and will stimulate and promote granulation and healing. The ancient Greeks often refer to 'epomphalia', a naval ointment made from honey for the newborn. Old mead which is almost as extinct today as the dodo, was also used as an antiseptic lotion.

"The rural population of the European continent, especially that of the Slavic countries, using honey for all kinds of wounds and inflammations. 'Honey Ointment', consisting of equal portions of honey and white flour, well mixed with a little water, has a wide usage.

"In the 'Alpenlaendische Bienenzeitung' (February, 1935) we find the following report from a man: 'In the winter of 1933 I heated a boiler of about 35 gallons of water. When I opened the cover, it flew with great force against the ceiling. The vapor and hot water poured forth over my unprotected head, over my hands and feet. Some minutes afterwards I had violent pains and I believe I would have gone mad if my wife and my daughter had not helped me immediately. They took large pieces of linen, daubed them thickly with honey and put them on my head, neck, hands, and feet. Almost instantly the pain ceased. I slept well all night and did not lose a single hair on my head. When the physician came he shook his head and said; 'How can such a thing be possible?' "

We know from experience that honey is good for scalds. Just recently the Editor's daughter, while canning fruit, accidentally let her hand come in contact with boiling water. Her hand after being scalded was immediately submerged in a vessel containing honey and allowed to remain there for a time. Sterilized gauze was then applied. Comparatively little pain was experienced. After a few days the dressing was removed and the hand was back to normal in a comparatively short time. Honey does appear to have curative qualities.

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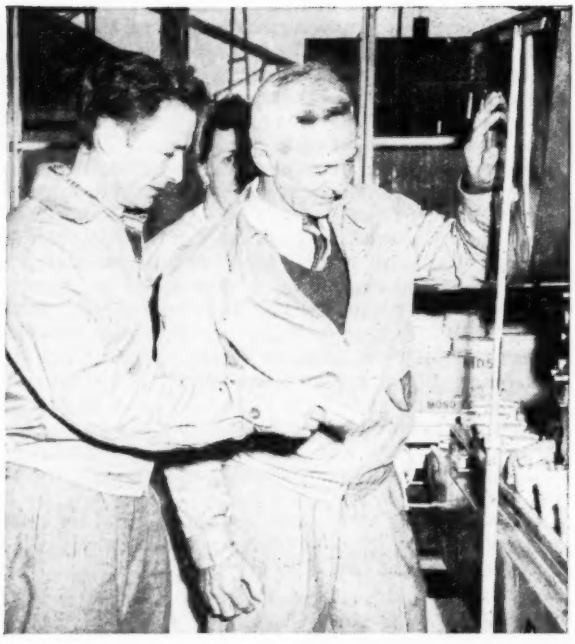
NEWS



Mr. Corner and Mr. Le Maistre viewing creamed honey being packed on a two-line automatic filling machine. Mr. LeMaistre is Provincial Apiary Officer of Alberta, and is extremely well posted on the subject of beekeeping in general. While Mr. Corner lacks the practical experience of Mr. LeMaistre he has a very sound theoretical knowledge, plenty of energy and a very pleasing personality. — Photo from Dept. of Extension, University of B.C., Vancouver, B.C., Canada.

Apiculture Building, University of Maryland, College Park, Maryland. The first building, exclusively devoted to bee culture, on any college campus in the United States.

REEL

A picnic dinner enjoyed by a few of Clark County, Washington beekeepers. —Photo sent by Mrs. Mabelle Hansen, Battle Ground, Washington.

The Manitoba Honey Queen, Miss Shirley Tomsic of Winnipeg. Crowning of the queen took place at the banquet program of the Manitoba Beekeepers' Association Jubilee Convention on November 20. Miss Tomsic is the daughter of a Manitoba beekeeper who operates approximately 200 colonies. Shirley assisted her father for many years prior to taking up her present occupation as a stenographer. She still has a great deal of interest in beekeeping and lends a hand in the business at every opportunity.—Photo sent by D. R. Robertson.

Honey Quick Breads

MRS. BENJ. NIELSEN
Aurora, Nebraska

Tempting honey quick breads.
—Photo courtesy Kellogg Co.

THERE IS no nicer, more satisfying way to use Nature's finest sweet than in a variety of toothsome quick breads. Easy to make, stirred up in a twinkling, practically failure-proof, you can be smugly sure of refreshments in a jiffy when friends and neighbors drop in. Wrapped in aluminum foil and stored in the breadbox, these wholesome loaves actually improve in flavor and goodness with an aging period. Served plain or treated with a cheese spread, um!

Breads that are leavened with baking powder or soda should not be beaten or kneaded. Because these breads rise only once, any gluten which is developed has no opporunity to stretch and become tender. So the usual procedure is to blend egg, liquids, and melted shortening, then to stir in sifted dry ingredients, mixing only enough to dampen.

Fruited Honey Bran Bread

One egg, well-beaten, ⅔ cup honey, 1 cup buttermilk or sour milk, 1½ cups whole bran cereal, 2 cups sifted flour, 2 teaspoons baking powder, ½ teaspoon baking soda, 1 teaspoon salt, ¾ cup cut dates, ¾ cup raisins, and ½ cup chopped nutmeats.

Combine egg, honey, buttermilk, and bran cereal; let stand until most of moisture is taken up. Sift together flour, baking powder, soda, and salt. Add to first mixture together with fruit and nutmeats, stirring only until combined. Spread in greased 9½ x 5½ inch loaf pan. Bake in moderate oven, 350 degrees F., about one hour. Let stand until cool before slicing. Yield: 1 loaf.

Honey Pineapple Juice Bread

One cup whole bran cereal, 1 cup unsweetened pineapple juice, 2¼ cups sifted flour, 3 teaspoons baking powder, 1 teaspoon salt, 2 tablespoons shortening, 1 cup honey, 1 egg, and ¾ cup chopped nutmeats.

Combine bran cereal and pineapple juice; let stand until most of moisture is taken up. Sift together flour, baking powder, and salt. Blend shortening and honey; add egg and beat well. Stir in bran mixture. Add sifted dry ingredients together with nutmeats, stirring only until combined. Spread in greased 9½ x 5¼-inch loaf pan. Bake in moderate oven, 350 degrees F., about one hour. Yield: 1 loaf.

Honey Orange Bread

Two tablespoons shortening, 1 cup honey, 1 egg, well-beaten, 1½ tablespoons grated orange rind, 2⅔ cups sifted flour, 2½ teaspoons baking powder, ½ teaspoon soda, ½ teaspoon salt, ¾ cup orange juice, and ¾ cup chopped nutmeats.

Blend shortening and honey thoroughly. Add egg and orange rind. Sift flour with baking powder, soda, and salt. Add to creamed mixture alternately with orange juice. Add nuts. Bake in greased loaf pan 9½ x 5¼-inch, one hour and ten minutes. Yield: 1 loaf.

Fig Honey Bread

One cup boiling water, 1½ cups cut dried figs, 1 cup honey, 2 tablespoons shortening, 1½ cups whole bran cereal, 1 egg, slightly beaten, 1 teaspoon vanilla, 1½ cups sifted flour, 1 teaspoon baking powder, 1 teaspoon soda, 1 teaspoon salt, ¾ cup chopped nutmeats, and 1 tablespoon milk.

Pour boiling water over figs, honey, and shortening; cool. Stir in bran cereal, egg, and vanilla; let stand until most of moisture is taken up. Sift together flour, baking powder, soda, and salt. Add to first mixture together with nutmeats, stirring only until combined. Spread in greased 9½ x 4¼-inch loaf pan. Bake in moderate oven, 350 degrees F., about 35 minutes. Brush with milk and bake 15 minutes longer. Let stand until cool before slicing. Yield: 1 loaf.

Live and Learn

by Propolis Pete

THIS IS a funny time of the year to be talking about extracting honey. So, I won't talk about that, just about cleaning up after extracting is over.

Beekeeping has a lot of attractions, but no matter how enthusiastic you may be about it, extracting is a messy job. Even though I enjoy that part of beekeeping too, still, cleaning up the mess is something that I could do without.

The reason for this outburst is that I have just discovered something that cuts out a lot of the aggravation. The discovery was an accident. Here it is. To start at the beginning, I saw a commercial on the TV about a wondrous liquid that did everything, including the cleaning of hard and dry paint brushes. Now, if you are careful, you won't have any hard dry paint brushes. But you know me. I'll lay them aside to be done some other time, and when that time comes, all they are good for is to help heat the shop by tossing them in the stove.

Well, I got myself a bottle of this gook and found that the brushes were exactly the same after 24 hours of soaking. If anything, the paint was just a little bit harder after treatment. Along around this time I was cleaning up the extracting equipment, to get it ready for the big crop that is coming in 1957 unless half a dozen things conspire to prevent it. One item was the double boiler that I use to melt down the cappings. I do this in a big double boiler after all possible honey has been drained out, because in spite of everything a lot is still trapped in the cappings. It isn't fit for human consumption, because it is badly discolored by the slumgum with which it is mixed, but it is good spring feed for packages or weak colonies. After melting it up, the boiler is a mess with slumgum and wax sticking to the sides and bottom. This stuff can't be washed off, and you can't scrape it entirely clean.

So, when the paint brush cleaning turned out to be a flop, I was getting ready to throw out the phony paint brush cleaner, when I got the idea of seeing if it would work on wax. It did. With a little pad of steel wool soaked in it, the film of wax just vanished into a light lather. The steel wool took care of the lumps. Then a thorough washing with ordinary detergent and water made the whole outfit shine like new. Towards the end of the job I thought that maybe any old detergent would do. The liquid detergents did, but I ran out of boiler before I got around to the dry detergents. I wouldn't be surprised if they did, because most of them are the same thing, despite all the yak yak about each one being best. Try it yourself next summer.

I had another experience last fall. Toward the end of summer a friend asked me to remove a swarm that had settled in his hedge. His kids couldn't resist the temptation to throw stones at it. So I hived it in a spare super and left it. When packing time came I found to my surprise that they were still there, and though they had practically no honey because they had been robbed out, they were alive. I didn't have any Cyanogas with me, and then forgot them until a couple of days ago. I figured that I could use the combs for new packages this spring, and went to get them. Yep, they were still alive. No stores, but hanging on somehow.

If you haven't had a lot of experience with bees, and see a thing like this, you get the idea that all this talk about plentiful stores is a lot of bunk. It isn't though. Colonies use a surprisingly small amount of honey up to the time they start brood rearing in the late winter, and then it goes so fast that you wonder what in the world they can be doing with it. That is why these poor colonies fool so many beekeepers. They hang on until just the time that you expect them to start to grow, and then conk out because the remaining bees are old and haven't got the umph to carry on any longer. It is the young bees who did not go through the whole winter who ordinarily take over at this time and build up to storing strength. That is where your plentiful stores are needed, and don't think that they stop

(Continued on page 185)

FROM Foreign LANDS

Translated and Edited by ERIKA BARTH

That Buzzing in the Head:

T. G. JONES reports that a friend of his was manipulating his bees when he discovered that a bee had entered his ear. By the time he got assistance the bee had disappeared from sight and he could hear the buzzing inside. The beekeeper was rushed off to surgery, but he had not been there for long when the offending bee came out of the ear on her own accord and flew out of the window. Throughout all the excitement the beekeeper was not stung.

British Bee Journal. Dec. 6, 1956.

Behavior of Worker and Queens:

IT IS GENERALLY stated that when a swarm leaves the hive the queen goes along. This is not always true, according to some recent beekeeping research by M. Delia Allen of the North of Scotland College of Agriculture. This investigator reports that when the swarm leaves the hive the queen may remain behind, although the workers attempt to force her to go out with the swarm.

Another notable finding was that a year-old laying queen can pipe distinctly and makes a sound similar to that of a virgin. That should be of interest to queen breeders everywhere.

In these studies the Scotch scientist found some interesting facts about the nurse bees surrounding the queen. First, all stages of worker bees were found in the circle of attendants round the queen but only those younger than 12 days fed her. As swarming time approached no bee older than six days was seen to feed her.

Some beekeepers say that workers will prevent a queen from damaging cell cups containing eggs. M. Delia Allen found the opposite to be true. Worker bees never interfered with the queen when she damaged queen cups containing eggs. It was also noted that the queen laid eggs in queen cups quite voluntarily.

The Scottish Beekeeper. December 1956.

Controlling Ants:

IN AUSTRALIA, as elsewhere, beekeepers are always troubled with ants. Many insecticides were tried with little success until the introduction of deildrin. Spraying ant barriers with deildrin brought complete and effective control. The whole story on controlling ants in apiaries was published by Kirby L. Cockerham and Everett Oertel in June 1954 issue of Gleanings.

The Australian Bee Journal. Nov. 1956.

What Will They Think of Next?

AT THE RECENT XVIth International Beekeeping Congress many were surprised to learn that honey prepared by Chinese honeybees was **sweeter,** of higher quality, and more delicious than honey produced by Italian bees. These differences resulted from the different ways Chinese and Italian bees have of ventilating their hives.

It was reported that while the Italian bees in groups from outside the entrance fanned in fresh air, there were others inside fanning the stale air out. The Chinese bee only fans inside the hive and thus drives out the moist air gradually, and so the good flavor of the honey is preserved.

British Bee Journal, September 1956.

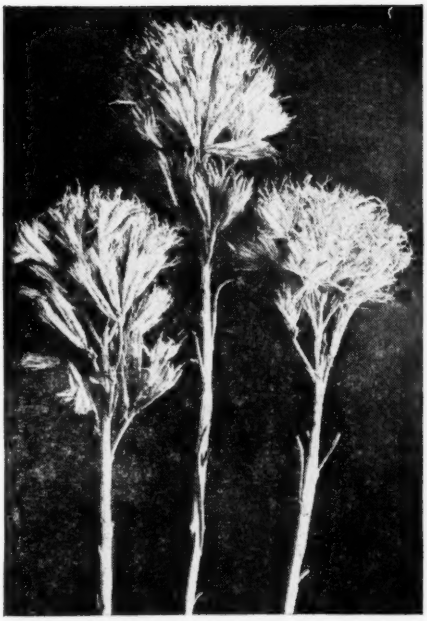
Let's Talk about Honey Plants

HARVEY B. LOVELL,
University of Louisville

Chickweed (**Stellaria media**). Fred Miller of Louisville, Kentucky, tells me that there were several hundred acres of waste land which came up in chickweed in the spring of 1956. Due to an unusually wet spring the plants bloomed heavily for a long time and were much visited by bees. At least six of his colonies stored a shallow super of honey which was light in color with a mild flavor. Although bees are often reported visiting chickweed in early spring, this is the first time I have heard of a surplus being stored. Chickweed belongs to the pink family and the small white flowers have a pair of nectaries at the base of each of the five stamens which secrete considerable nectar.

Shittim or Chittamwood (**Bumelia lycioides**). Mr. C. R. Palmer, Geary, Oklahoma, has recently sent me a bottle of honey which he reports came from shittim, a small tree in the vicinity of his apiaries. He writes, "As best as I can remember shittim blooms about the last week in June and continues for two or three weeks. I am sending some dried-up fruits, a sketch of the bloom, and a leaf which is still green. The honey is extra light amber and resembles clover but has a slight tobacco after-taste." He adds that he checked all the other possible honey plants in the area but none of them were yielding at the time this honey was made. I found that the honey had a rich pleasant flavor. Several people who tasted it for me could not notice any tobacco flavor, although I thought I did.

Texas. In southern Texas this plant is known as Coma or southern buckthorn. E. B. Ault of Weslaco wrote me that it blooms from September 15 to November 1 and produces a white honey with a pronounced flavor and sometimes produces a small surplus. Clay Eppley of Brownsville, Texas, wrote that Coma bloomed as late as December 1 and yielded a white honey with a good flavor which granulates slowly but adds, "There is very little coma brush left in the valley."



Rabbit brush (chrysothamnus sp.)

Rabbit brush (**Chrysothamnus nauseosus**). William T. Wilson of the Colorado A. and M. College writes me that rabbit brush is a very important source of fall nectar in Colorado and is found in dry waste land over a large portion of the state. "Both wild and honeybees are very active on the plants. The blossoms and nectar flow are not affected by early frosts. The sugar content of the nectar has a range of 19.4 to 48.3 per cent. The liquid from the honey stomachs has a light yellow tint. The liquid has a strong sweet odor and is thought to produce honey with a strong flavor. The bees remain for a long period on one group of blossoms and can easily be collected. They often appear intoxicated and may have a staggering movement."

Rocky Mountain bee plant (**Cleome serrulata**). This plant seems misnamed since according to Mr. Wilson it has

(Continued an page 183)

Beekeeping in Cuba . . . . the "Pearl of Antilles"

by GONZALO S. ORDETX, Havana, Cuba

CUBA, SOMEWHAT larger than the State of Virginia, lies just 90 miles south of the coast of Florida. The Republic is made up of the largest of the West Indian Islands, the Isle of Pines, and numerous smaller bits of land totaling about 44,164 square miles in area.

The climate of Cuba is subtropical. Although situated south of the Tropic of Cancer it is cooled by the prevailing winds and the ocean. The average annual temperature is about 75 degrees F., with little variation between day and night. The years are divided into two seasons, the dry extending from November into May, and the wet from May through October. Rainfall average is about 55 inches a year.

The soils are generally fertile and suitable for a variety of agricultural products. For this reason the greater part of the original vegetation has been replaced by cultivated plants introduced from other countries as the sugar cane, coffee, sesame, rice, bananas, etc. Many of the native plants are of considerable importance from an economic standpoint as the tobacco, pineapples, guava, the palms, etc. Sugar is the dominant industry and accounts for approximately 80 per cent of the total value of all exports. Tobacco is the second commercial crop.

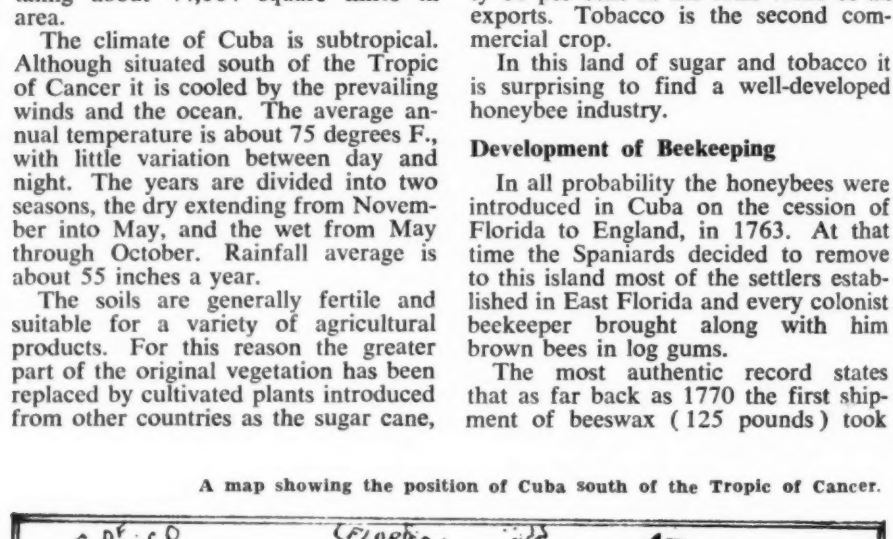
In this land of sugar and tobacco it is surprising to find a well-developed honeybee industry.

Development of Beekeeping

In all probability the honeybees were introduced in Cuba on the cession of Florida to England, in 1763. At that time the Spaniards decided to remove to this island most of the settlers established in East Florida and every colonist beekeeper brought along with him brown bees in log gums.

The most authentic record states that as far back as 1770 the first shipment of beeswax (125 pounds) took

A map showing the position of Cuba south of the Tropic of Cancer.



place from the port of Havana. Some years later, in 1776, the amount exported was 15,060 pounds. Since then, the wax production in Cuba expanded steadily until the war of Independence. In 1865, beekeepers produced about 5,275,000 pounds of beeswax for export, an amount that was a record for the "bee-gums" industry in the colonial era.

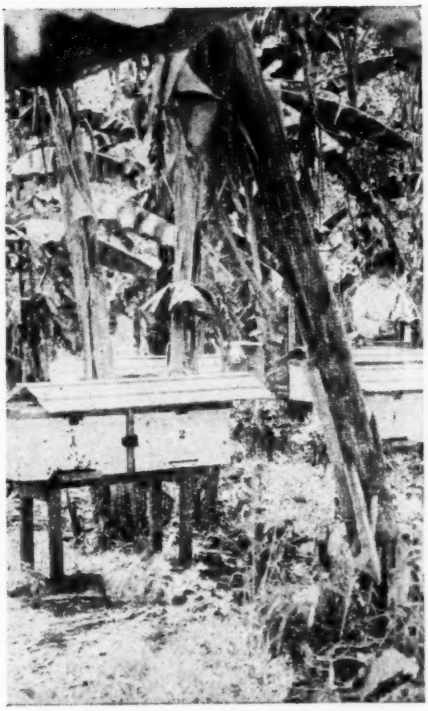
At present modern beekeeping is very much extended over all the Island. The number of colonies of bees per apiary is usually from 30 to 100, the average being 60; but there are a few large apiaries consisting of about 200 to 400 hives. In the suburbs of the largest cities, there are some small beekeepers — hobbyists — who own from 6 to 12 colonies and keep them in their backyards.

Today there are approximately 800 commercial beekeepers in the Island, but only a few professionals own up to 1,500 or 2,000 beehives.

We find here that the poor regions, intensely cultivated and adjoining the great centers of population, are overstocked with beehives; the same occurring along the main highways. On the other hand, in the rich hilly regions, hardly any modern beehives are found, but rough, home-made beehives, resulting in the loss of thousands of gallons of nectar. This is due, in part, to the lack of connecting roads, since the beekeepers who know modern methods of bee culture usually do not locate apiaries in regions of difficult access, where rivers of honey are lost.

In Cuba there are some 200,000 beehives producing 5,000,000 kilograms of honey and 300,000 kilograms of beeswax each year. Almost since the establishment of the Republic, that is to say, from 1903 to 1950, inclusive, the products of the bee have represented to our national income the value of $40,420,998. These are the direct profits that this laborious insect has contributed. But the indirect benefits that it has rendered to the countryman as a pollinating agent are much greater.

The **swarm problem** in Cuba is the same as in other tropical countries. We have two critical swarming periods, one during September and October—before the main flow, and the other during March and April—near the close of the honey season.



A banana plantation offers good shade to this apiary at Santiago de las Vegas, Cuba.

In general, the **bee diseases and insect pests** are not a serious factor, except in a few localities. Both American and European foulbrood occur to some extent; and also we have some Nosema and paralysis, but Acarine disease is unknown. The wax moth is the worst enemy the honeybees have here. Ants and cockroaches become troublesome in weak hives, but in strong colonies bees will not permit them to enter.

Of **bee races,** a number of the more progressive apiarists favor the three-banded Italian, but the remainder, by far the greater number, still keep the Brown Caribbean honeybee, a strain of the brown bee which has been bred in this country for nearly 200 years. The Caucasian race was introduced in the Island by the writer about four years ago, and it seems particularly desirable for the production of extracted honey.

The Honey Crop

The honey season extends more or less from the middle of September to

XUM

A swarm on a "racimo" (bunch) of bananas is not unusual in Cuba.

April or May. The main flow of nectar occurs during December, January, and February. In some districts, where the greater part of the original vegetation has been replaced by cultivated plants, there is a dearth period of nectar in June and July. But in general, due to our mild and uniform climate, there is almost always some nectar for the bee to collect.

The honey yield varies with the season and the location. In the provinces of Oriente and Las Villas, honey crops of about 400 pounds per colony are not uncommon in a good year, but the average surplus in frame hives is about 150 pounds. For the country as a whole (including box hives and gums) the present average is 55 pounds per colony.

At Guanahacabibes peninsula, a sparsely inhabited district in the western part of the Pinar del Rio province, in 1943, a crop of 1,200 pounds of wax and 90,000 pounds of extracted honey was secured from a modern apiary of 150 colonies. It is the largest honey crop reported in Cuba in recent years for a single beeyard. The production per colony averaged 600 pounds.

Main Sources of Nectar

The number of honey-yielding plants in Cuba is considerable, the equal to that which occur in other tropical countries whose flora is rich and varied. But we do not believe that for the whole Island the species productive of surplus exceed three dozen, and plenty of those are important only in limited areas.

The most valuable honey plants are the white and pink aguinaldos and the royal palm. These three give at least 40 per cent of all honey produced in Cuba. The aguinaldos are vines belonging to the genus **Ipomoea** of the Convolvulaceae family. The white species blooms about Christmas time, and yields one of the finest honeys in the world. (See Gleanings, Sept. 1949). The royal palm (**Roystonea regia**) is the most graceful and majestic of all palms. It grows almost everywhere in the Island and may well be called the national plant of Cuba. It can bloom during any time of the year, although by preference throughout October and November. It is very common to see at the same time on a palm tree clusters of green fruits, ripe fruits, and others of flowers. The honey is of a golden color; it has a characteristic flavor and aroma that make it delicious to the taste.

Among the fruit trees which are important should be mentioned the avocado (**Persea gratissima**), the mango (**Mangifera indica**), mamocillo (**Meli cocca bijuga**), pomarrosa or rose apple (**Eugenia Jambos**), and the citrus.

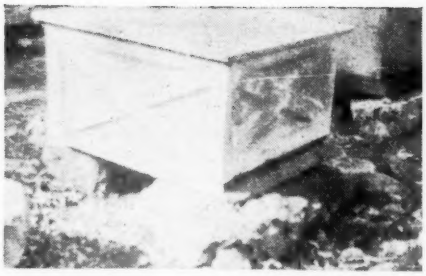
Campeche or logwood (**Haematoxylon campechianum**), a native of the Antilles and south of Mexico, is considered one of the species most productive of honey in the world. In regions where it is common, frequently a single colony stores as much as 40 gallons of honey from this source. In Cuba, unfortunately for the beekeeper, this tree is

abundant only in the low and swampy regions of the southern part of Camaguey and in Tunas de Zaza (Las Villas), being found rarely in the remainder of the country.

Carolina (**Pachira insignis**), a medium-size tree, is important in localities; the ceiba (**Ceiba pentandra**), a giant of our forests, is a heavy yielder in winter. Black mangrove (**Avicennia nitida**) and sea grape or uvero (**Coccoloba uvifera**) are the main contributing trees along the coast.

Romerillo de costa (**Viguiera helianthoides**) is a weed growing commonly on calcareous and gravelly soils near the coasts. Sometimes it covers hillsides and fields so thickly that no room for other plants can be found. It yields large quantities of surplus honey at the time the white aguinaldo is blooming.

Some cultivated plants which deserve special mention are the ajonjoli (**Sesamun orientale**), coffee (**Coffea arabica**), and banana (**Musa** spp.). The ajonjoli or sesame is grown to some extent and yields well in favorable seasons. Coffee is grown principally in the mountainous regions of Oriente, Las Villas, and Pinar del Rio. Each coffee tree remains in bloom for a short period of time and secretes nectar copiously. Its honey is almost white, of good density and of a characteristic strong aroma. The banana in its various varieties is one of the most important of all cultivated plants in the Island; it blossoms over an extended period and gives the bees much pasture to work upon.



Cement bee hive designed and built by S. Espina, of Agramonte, Cuba.

As for beebread, we can assure that the beekeeper in Cuba does not have any problems for lack of pollen. Even in the so-called period of scarcity of honey, pollen-yielding plants in abundance are found in bloom.

My Experience in Feeding Pollen Substitute

by CECIL B. HOY, Armstrong, B. C., Can.

IT WAS WITH great interest that I read on page 359 of Gleanings, June 1956 issue, of Propolis Pete's complete failure in the feeding of a pollen substitute composed of soy flour and brewer's yeast.

Last year we fed this combination first six to one and then four to one mixed with sugar sirup two to one with great success. Starting March 20 and following with cakes of the pollen substitute on March 29 and April 9 and 10 at which time we removed the winter wraps, examined the brood nest, and reversed the brood supers. Shortly after this, natural pollen started coming in heavily so we discontinued the feeding of the pollen substitute. This proved to be a mistake in the case of some of the weaker colonies.

About the middle of June (main honey flow was about eight or ten days old) we examined the slow colonies carefully and discovered them in very heavy brood rearing without any pollen reserve at all, though pollen was coming in good. We started feeding the pollen substitute again which they took down very fast. On our next examination of the brood nest (believe it or not) they had increased both their brood and put up a small reserve of natural pollen in the combs. These colonies at this time were out of balance. By that I mean that the brood and house bees far outnumbered the field force. This is probably part of the reason for successful pollen feeding at that time.

Unfortunately these slower colonies never made a crop. In November 1955 before the snow came we had sub-zero weather which killed out much of the sweet clover and what did survive yield-

(Continued on page 190)

XUM

A Talk to Beekeepers

by M. J. Deyell

"There is some hope for us if we can but realize the extent of our own ignorance."
—Socrates

THE ABOVE can be applied to beekeepers as well as to those engaged in other lines of work. Occasionally, I meet a beekeeper who gives me the impression that he knows all there is to know about beekeeping. Such a person may not realize the extent of his own ignorance. He knows it all and no one can tell him anything. If this beekeeper arrives at the place in his beekeeping experiences where he realizes that he knows very little and has an open mind to learn, there is some hope for him.

Some of us go along in life without doing much real thinking. When it comes to apiary management in planning our program for the season ahead, if we would just sit down and do some honest-to-goodness thinking and not so much acting, we might be better off. The old slogan "Be sure you are right, then go ahead" surely applies to beekeeping.

I must say, however, that it is sometimes a little difficult to be absolutely sure that you are right. It seems to me that the beginner who meets a problem in beekeeping and hardly knows what to do will not go far wrong if he asks the advice of some experienced beekeeper in his community, one who has actually made a success of beekeeping.

I Visit Some Apiaries

Yesterday, February 6th, the sun was shining and the mercury stood at 44 degrees F. in the shade. The thermometer is on the northeast side of the tree standing beside our scale hive. Colonies in our experimental yard were venturing out into the sunshine, at the hive entrances, but were not flying to any extent. There was some spotting on the front of the hives, indicating that the bees need a cleansing flight. They have been kept in their hives for about a month.

I then drove out to one of my apiaries, six miles from Medina. This yard is in a sheltered spot in an orchard. Those bees were flying quite well. The temperature felt warmer out there than it did in Medina.

By the way, I have learned from past experiences that when you visit a yard early in the spring when the bees are taking their first cleansing flight one should wear an old suit and hat or perhaps carry an old umbrella. However, there was very little spotting yesterday. This likely occurred before I arrived.

The yard I visited has 32 colonies, one of them a Caucasian colony. This colony was started with four combs of brood with adhering bees, also some combs of honey and a Caucasian queen received on Aug. 17, '56, the day I left on my vacation. While I was away I wondered if the queen would be accepted and whether or not other bees in the apiary would rob the honey out of this hive, since there was very little honey coming in at the time.

When I returned, September 2nd, one of the first things I did was to examine that hive. Fortunately, the queen had been accepted and already had brood in three combs. During September and early October we had a good honey flow in this locality and that small colony built up rapidly and had brood in six combs during early October. Furthermore, bees filled that single story 10-frame brood chamber jammed full of honey.

Since this colony was started with combs and bees from an Italian colony, it was interesting to observe how the dark Caucasian bees increased in numbers while the Italian bees decreased in numbers. A few of the yellow Italian bees were found in the hive during late October. It is doubtful if any of them will be found this spring.

Yesterday I couldn't resist the temptation to remove the hive cover and take a look at this Caucasian colony. It was a beautiful sight, the bees partially clustered covering eight or nine combs. The bees in this colony were not flying while the Italian colonies were. Apparently, the Caucasian bees did not need a flight. In the past I have had some experience with Caucasian bees. However, I'll have more

A box hive apiary owned by an Indian somewhere in the mountains of North Carolina.

to say about the colony I have in future talks.

Part of my work is answering questions from beekeepers all over the world. Quite a number of beekeepers wish to know if it is feasible to keep more than one race of bees in the same yard. I tell them this can be done but that there is a possibility or danger of the races intermingling. Queens are superseded, sometimes unbeknown to the owner, unless he examines his colonies frequently. The virgin queens from Italian colonies will perhaps mate with drones from Caucasian colonies or vice-versa. This would naturally result in a hybrid strain of bees. However, it should be possible to keep more than one race of bees in an apiary, if all colonies would be requeened each season. This would help to prevent intermingling of races.

Our Scale Hive

On November 18, 1956 the two and one-half story scale hive weighed 150 pounds. Yesterday, February 6th, it weighed 136 pounds. That means that during 80 days the hive has lost 14 pounds, or 224 ounces, which amounts to about two and three-fourths ounces per day.

You will notice I say "the hive has lost that amount of weight". This does not necessarily mean that the bees consumed 14 pounds of honey although it seems safe to assume that most of the loss in weight is due to consumption of stores. Some old bees have died and have been carried out of the hive.

A little later on the colony will begin brood rearing and some of the honey used will be turned into brood and so it may be a little difficult to get an accurate estimate on food consumption of the colony.

A Word to Beginners

Beginners who have bees should visit their apiaries quite early in the spring when the first warm day comes to check all hives in order to close the entrances of hives in which colonies may have died during the winter. If such hives contain combs with honey, the entrances should be closed tightly so that bees from other hives cannot gain entrance to rob the honey out of the combs. Such robbing would get the bees badly stirred up and when bees do get stirred up early in the spring, they are likely to start robbing on the slightest provocation.

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Installing and Managing Package Bees

A number of articles are appearing in GLEANINGS which cover this subject so it will be unnecessary to go into much detail. However, I wish to stress three important requirements in connection with packages.

First, get the package installed early. **Second,** feed the package bees lavishly, and **third,** give the packages ample comb space during their building-up period.

Regarding the first requirement, it is perfectly possible, in fact advisable, to get the packages started early, preferably at the very beginning of the early spring honey flow in your locality. There may be some in the North who install packages during the latter part of March, even before bees can collect pollen. I see no great advantage in this unless the beekeeper has combs of honey and pollen to feed the bees. Packages with pollen and honey can start building up, even though pollen and nectar from natural sources are not available for a time.

It is possible during a good honey season to secure returns on an investment in packages the first season. When this is done, the packages must reach maximum strength at the very beginning of the major honey flow. It takes about eight or nine weeks for a package of bees to develop into a normal-sized colony. Perhaps it would be better to say 10 weeks.

Regarding **feeding,** some years ago, we installed hundreds of packages but I can see now that we did not give the bees enough sugar syrup. We would feed one 10-pound pail of thick sugar syrup, then if there was a light honey flow from early sources, we perhaps would fail to feed more syrup and consequently the packages did not build up rapidly. And so I would say, feed each package of bees two or three 10-pound pails of thick sugar syrup made of two parts of granulated sugar to one part of water, and more if they need it.

If the packages are installed in hives containing frames with full sheets of foundation, it may be advisable to feed a pollen substitute, especially if the pollen supply is short at that season of the year. In some areas there seems to be an abundance of pollen, in others a pollen shortage.

Regarding the third point, proper management during the build-up period, this includes providing extra comb space or supers for the storage of incoming nectar and pollen, also for brood rearing during the time the packages are developing into full colonies.

When packages are installed in single-story brood chambers, it is necessary to give another super when the queen has brood in eight combs.

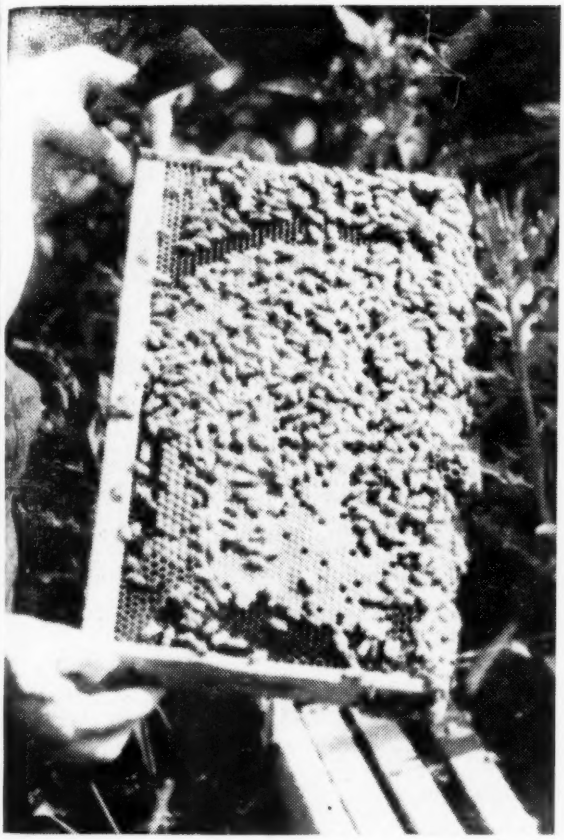
During some seasons there is a heavy spring flow. In this area, during 1955, we had an unusually heavy spring flow from golden rocket. As a matter of fact, some of our colonies stored some surplus honey. This meant that colonies were in unusually good condition to take advantage of the summer honey flow from clovers and basswood that followed. During 1955 the bees in this area stored a good surplus and as I think of it now, it would seem that part of our success can be attributed to the unusually heavy spring honey flow which put colonies in exceptionally good condition. Most colonies were boiling over with bees during early June.

Within the week a beekeeper in another state inquired whether or not we thought his bees needed feeding. Obviously, we could not answer his question intelligently. We told him he should heft the hives by lifting the back end of each hive and if it felt light he should investigate the food supply. If the hive was quite heavy, feeding would hardly be necesary for the time being, at least.

By removing the hive cover, it is usually possible to tell by looking down between the top bars of the frames whether or not the colony has honey. If you see sealed honey just below the top bars in a number of the frames, this tells you that the colony has enough food for a time at least. If you cannot see any sealed honey it is well to remove the frames of the brood chamber to find out if feeding is necessary.

How to Feed

The division-board feeder listed in bee supply catalogs is a handy feeder. It fits into the brood chamber, occupies the space taken by a comb and will hold five or six pounds of sugar syrup. This feeder is usually placed at the side of



A brood comb with adhering bees, also worker brood. There is a patch of drone brood in the upper left corner. Drone cells project beyond worker cells and look something like bullets in cartridges. Some drone brood will be found—even though full sheets of worker foundation are used to start combs.—Photo by Paul Hadley.

the brood chamber, where the bees can reach the syrup easily.

The Boardman entrance feeder is also used and many beekeepers like it. However, for cold weather feeding this type of feeder is not so good as the division board feeders because when the weather is quite cold the bees may not break their cluster in order to go down to the entrance feeder to get the syrup.

Still another type of feeder is the friction-top pail feeder used by many beekeepers. About 15 or 20 holes are punched in the lid of a five or ten pound friction-top honey pail with a two-penny nail. Warm sugar syrup is put into the pail and after the lid is put on, the pail is turned up-side-down, over the hole in the inner cover, or directly over the brood frames. The bees will take the syrup through the small holes in the cover. It is necessary to place an empty hive body or super underneath the outer cover to make room for the pail feeder.

In some sections of the country late honey flows did not materialize last fall. Consequently, there may be some hungry colonies of bees this coming spring. It will certainly pay beekeepers to feed such colonies in order to save the bees, also to secure a crop of honey this coming season. This may be the season we have been waiting for.

In next month's talk I shall have something to say on how and when to manipulate hives of bees.

Our Cover Photo

Queen breeders are busy grafting larvae into queen cell cups, putting ripe cells into mating nuclei hives and all that goes with queen rearing. Queen and bee shippers work long hours from March until June. — Photo by J. H. Staby.

XUM

American Federation Meeting in Long Beach

Banquet—Toastmaster Wendell Shore, Mrs. Shore, Officers of the Federation, Ladies Auxiliary California Associates and Honey Queens.

THE JOINT industry National Annual Meeting held in Long Beach, California, January 28 to February 1st, drew a large and enthusiastic group of beekeepers, honey packers, bee supply manufacturers, state and federal research workers, extension men, inspectors, and teachers. The registration showed 480 and 460 attended the banquet Thursday evening.

American Honey Institute Board and Directors. Standing, left to right: Woodrow Miller, Edward Burleson, Baxter Woodman, Robert Dadant, R. M. Pugh, Canada; Roland Stone, and Henry Schaefer. Seated left to right: R. B. Willson, Barney Remer, Harriett Grace, and Alan Root. — All Photos by Lafayette Photo Studio, Long Beach, California.

Officers and Executive Committee of the American Beekeeping Federation. Left to right front row: H. A. Schaefer, past president, Wis.; S. J. Watkins, president, Colo.; Ray Reed, vice president, Calif.; Robert Banker, sec.-treas., Minn.; back row: Executive Committee—L. R. Budge, Idaho; A. C. Walker Jr., Texas; H. R. Swisher, Ohio; Harry Rodenberg, Jr., Montana; and Wm. W. Wicht, Miss.

S. J. Watkins of Colorado was re-elected President of the American Beekeeping Federation, Inc. Ray Reed of California was re-elected Vice President; Robert Banker of Minnesota, Secretary-Treasurer. The Executive Committee for the Federation consisted of L. R. Budge of Idaho, B. C. Walker, Jr. of Texas, H. R. Swisher of Ohio, Harry Rodenberg, Jr. of Montana, William W. Wicht of Mississippi.

The American Honey Council elected Roland Stone as President, Millard Coggshall of Florida, Vice-President, Leslie Little of Tennessee, Secretary-Treasurer.

The American Honey Institute re-elected Barney Remer, Chairman, Ed Burleson of Texas, Vice-Chairman, and Harriett Grace of Wisconsin, Executive Director.

The Honey Packers' and Handlers' Association elected Ed Burleson of Texas, President.

The Bee Industry Association and Supply Manufacturers re-elected Robert Dadant, President.

The Ladies Auxiliary of the American Beekeeping Federation re-elected Mrs. Newman Lyle as President.

The work of the convention can best

(Continued on page 189)

Ladies Auxiliary Luncheon.

Just News

The **Westchester County Beekeepers' Association** will hold their next regular meeting at the Odd Fellows' Hall, 20 Lockwood Ave., New Rochelle, N. Y., on Sunday, March 17, at 2:30 P.M. sharp. We urge every member to bring their family and friends, as a very interesting movie will be shown. Our guest speaker will give a short talk on this film. Refreshments will be served at the close of the meeting.—Mrs. Alfred Roth, Publicity.

The **Worcester County Beekeepers' Association** will meet on March 16th at the Worcester Natural History Society, 21 Cedar Street. Pot luck supper at 6:30 will be followed by a business meeting. Pictures will be shown by Mr. Alfred Krueger.—Peter S. Stapor, Pub.

The **Norfolk County Beekeepers' Association** (Mass.) will hold its next meeting at the Norfolk County Agricultural School, Walpole, Mass., on March 4, 1957 at 8 p.m. This will be "Ladies' Night" — Mrs. Santina Curran, Extension Home Economist, will give a demonstration on the "Uses of Honey in Cooking". A movie will follow. The February meeting was well attended. Mr. Milo Bacon gave a good "Report on Union Agricultural Meeting in Worcester". Mr. "Al" Jones, from Malden, Mass., was the guest speaker. He demonstrated various ways of "Feeding Bees".—Edith L. Colpitts, Corres. Sec.

The **Southern District of the Wisconsin State Beekeepers' Association** will hold a meeting on Saturday, March 23, 1957, at 10 A.M., at the Y.M.C.A. Building in Janesville. Everybody welcome.—Don Williams, Chairman.

The **Northwestern Minnesota Beekeepers' Association** will hold its next regular meeting at St. Hilaire, Minn., on March 26 at 1:30 P.M. All beekeepers and their wives in this area are urged to attend.—Edgar Lerohl, Sec.

The **Berks County (Penn.) Beekeepers' Association** will hold its spring meeting on March 13th 1957, at 8:00 P.M. at the Ontelaunee High School, Leesport, Pa., located on Route 122 about nine miles north of Reading, Pa. An interesting talk and discussion will be given on spring management by W. W. Clarke of Penn State College.—Samuel B. Althouse, Sec.-Treas.

The **Apicultural Society of Rhode Island** will hold its meeting in Providence, March 24, in the Chorus Room, Veterans' Memorial Building, 83 Park Street, at 2:30 P.M. The program will consist of a speaker, movies, and a discussion period. All beekeepers are cordially invited to participate in our meetings.—Wulf Kroekel, Corres. Sec.

The March meeting of the **Eastern Missouri Beekeepers** will be held on Tuesday, Mar. 5, 7:30 P.M. at the Clayton Court House. There will be an interesting movie as well as a question and answer period which will help in spring management of your hives.—Arrena Smith Gerlach, Sec.

The **Midwestern Beekeepers' Association** will meet Sunday, March 10th, 2:30 P.M. at the I.O.O.F. hall, 812 Westport Road, Kansas City, Mo. Topics to be discussed include "Preparation of Equipment", "Stimulative Feeding and How to Make Increase", and others of interest. Everyone welcome. Refreshments will be served by the Ladies Auxiliary.—J. F. Maher, Sec.

Dr. Eva Crane of England, Editor of Bee World, will address a meeting of beekeepers at the Morris Arboretum in Chestnut Hill, Philadelphia, on Tuesday evening, March 12, at 8 p.m. Dr. Crane, Director of the Bee Research Association of England, will be visiting this country during the spring months on a lecture tour. All beekeepers interested in hearing Dr. Crane are invited. Please use Meadowbrook Avenue entrance to the Arboretum. Meeting will be in the Mansion House.—Fred W. Schwoebel.

The **Ohio State Beekeepers' Association** spring meeting will be held March 21, in Room 100, B & Z Building, Ohio State University, Columbus. The out-of-state speaker will be Prof. Harvey B. Lovell. Louisville, Kentucky.

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 18c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

IOWA honey, one can or truck loads. Russell D. Smalley, Beaver, Iowa.

FOR SALE—200 supers shallow frame extra good, white clover, comb honey, in warm storage, Chandler, Oklahoma. Old Taylor Honey Co., Harlan, Iowa.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, Ohio.

CASH FOR BEESWAX. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Company, Millersport, Ohio.

BEST CASH DEAL for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

HONEY WANTED, all grades in 60's. Mail samples, advise quantity, best price. M. R. Cary Corp., 1612 No. Salina Street, Syracuse, N. Y.

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A. I. Root Company, Medina, Ohio; Council Bluffs, Iowa; San Antonio, Texas.

WRITE FOR Shipping tags and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. Walter T. Kelley Co., Clarkson, Kentucky.

HONEY WANTED — All grades and varieties. Highest cash prices paid. Mail samples. State quantity, HAMILTON & COMPANY, 2613 South Yates Ave., Los Angeles 22, California.

WANTED: Light amber clover and fall flowers honey, no buckwheat. Also white clover. Send sample and lowest price. Cloverdale Honey Co., Fredonia, N. Y.

WANTED—Honey in sixty-pound cans, also beeswax, any quantity. L. E. Allen, Tipton, Mich.

CASH for Amber and Buckwheat Honey. Best cash price for wax. Hubbard, Onsted, Michigan.

WANTED—Buckwheat and light amber honey. Eastern Food Products, 421 Bedford Ave., Brooklyn, N. Y.

WANTED—Extracted honey, all grades, all amounts. We pay cash. Send sample and price wanted. The Honeymoon Products Co., Box 85, River Rouge, Mich.

HIGHEST CASH prices paid for honey in all grades. Submit sample. Schultz Honey Farms, Ripon, Wisconsin.

WAX WORKERS renders and buys beeswax, manufactures plain and WAVYWIRED foundation. Prices and shipping tags on request. WAX WORKERS, Ithaca, N. Y.

WANTED, chunk comb and extracted honey. Mail sample and price. Stoller Honey Farms, Latty, Ohio.

FOR SALE

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Michigan.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

FOR SALE—New heart cypress 10-frame bottom boards. KD, 10 or more, $1.00 each; 50 or more, 90 cents each; 100 or more 85 cents each. One nailed up sample postpaid, $1.25. Fred L. Poole, Elizabethtown, Rt. 2, Box 67, No. Car.

FOR SALE—Used equipment. Certificate furnished. Best offer. Kerney, 1015 S. Lafayette, Royal Oak, Mich.

FOR SALE—340 Standard 10-fr. shallow extracting (or chunk) supers. No disease. Gerald Hodson, Converse, Indiana.

GOOD 20-frame Root extractor with ¼ motor. First $100. Francis C. Henkelman, Defiance, Iowa.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. Southwick Apiaries, Waban, Mass.

SUPERS, COVERS, BOTTOMS: Good grade wood. Supers, $1.00; covers and bottoms, (4 cleat), $ .75. Write for other information. Arthur Johanson, 11360 Redwood Highway, Healdsburg, California.

XUM

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

QUALITY BRED ITALIAN QUEENS

March ..... $1.25 each
April through May .. 1.00 each
Package bees available this season.
3 lb. pkg. w/q .....$5.00 f.o.b.
2-lb. pkg. w/q ..... 4.00 f.o.b.
Our breeder queens selected from our Michigan Apiaries for hardiness and honey gatherng.

Walter D. Leverette Apiaries
P. O. Box 364 Ft. Pierce, Fla.

Italian Queens
EUGENE WALKER
Rt. 2, Box 207
Live Oak, California

Booking orders now. Over 30 years a shipper. Send for Free Circulars.

BLUE BONNET APIARIES
Weslaco, Texas

BUILD your own FACTORY TYPE HIVES and SUPERS with SAMSON CORNER JOINTS. Only a bench saw and hand tools required. Our low cost Copyrighted BLUE PRINTS and INSTRUCTIONS cover everything and can save you many dollars. Write for information.
EARL TAYLOR, MALCOM, IOWA

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

CARNIOLAN and CAUCASIAN Bees for 1957. Booking queens. Each, $1.00; 2-pound bees with queens, $4.00; 3-pound bees with queen, $5.00. Lewis & Tillery Bee Co., Rt. 3, Box 251, Greenville, Ala.

FRAMES of brood and bees, queenless, package bees in your packages. Will buy or sell bee outfits. Walker Apiaries, Pharr, Texas.

PACKAGE BEES—Take a vacation on your express money. Come for your bees. Be our guest while here. 2200 hives to shake. Booking orders now. MILLER BROS., SAFFORD, ALA., U.S.A.

QUEENS, 95 cents, bees, 70 cents up depending on shipping dates. Will supply new cages or fill your cages. A. V. Dowling, Valdosta, Georgia.

CAUCASIANS—Very hardy, good working, gentle bees. "Hastings" breeder queens used. Young laying queens, $1.25 each. Fred Brock, McDonald, Tenn.

THE NORMA ROY APIARY—3 pounds bees, with queen, $3.75; 4 pounds, with queen, $4.50. Queenless package, deduct 75 cents. Live delivery and health certificate. Norma E. Roy & Son, Hessmer, La.

THREE-BAND ITALIANS and Carniolan bees and queens. 3-lb. with queen, $4.75; 5-lb., $6.75. Extra queens $1.20 per. Luther Pickett, Efland, N. C.

Dark Italian Queens, 600-pound strain, bred for production, $1.00. With 2 pounds of bees, $3.20; with 3 pounds of bees, $4.00. Henry Loehr, Caldwell, Texas.

CARNIOLAN and CAUCASIAN QUEENS, $1.00 each. I have the late Albert G. Hann strain of bees. Build up fast, make lots of white comb honey. Gentlest of all bees. I have increased my equipment to supply the demand. Roy Waddell, Rt. 3, Woodruff, South Carolina.

SELL ALL OR PART, 550 colonies of bees with extracting supers. Locations available. BALDRIDGE BROS. 196 Genesee Street, Geneva, New York.

FOR SALE—20 strong colonies with plenty of equipment. Will deliver to 50 miles. Noel Wagner, Shelbyville, Ill.

FOR SALE — 90 colonies, write for details. MOREHOUSE, Montevideo, Minn.

FOR SALE—50 hives Italian bees and equipment to operate. Complete inventory on request. Leland Cooper, Pelham, Ga.

FOR SALE — 12 double bodied 8-frame colonies at Marion, Ind. Rev. M. Penhorwood, Evart, Mich.

BECAUSE OF THE DEATH of Ray V. Potter, his entire lot of bees with equipment, 30 frame extractor, honey pump, supers, etc., also my 166 colonies of bees he was running on shares, or 279 colonies in all, are for sale. Bees in good condition, some two and three story. For price and particulars, contact Ray W. Potter, M.R. 1, Perrysburg, Ohio.—Chas. B. Hatton, Jefferson, R. 1, Ohio.

FOR SALE—Large honey tank, 135-gal. for $25.00. 390 10-frame 2-story bees, $12.50 each at yards. W. A. Wiley, West Point, Miss.

SEEDS

HONEY PLANTS—Ask for catalog. One packet seed each 6 unusual honey plants, $1.00; Pellett Clover root divisions, 25, $2.00, 100, $5.00; postpaid. Pellett Gardens, Atlantic, Iowa.

HELP WANTED

WANTED — Experienced beekeeper between ages of 25 to 35 for year-around work in Bismarck, North Dakota. Robert L. Pritchard, Bismarck Honey Co., Bismarck, North Dakota, Route 1.

BEE MAN with some experience. Season April to December. State qualifications, salary expected. Lavern Depew, Auburn, New York.

WANTED: Helper or experienced beeman for package and queen season. Give experience, age, size and wages expected in first letter. Howard Weaver, Navasota, Texas.

WANTED—Experienced or inexperienced bee man. Seasonal or year around. Stewart Apiaries, Trenton, Texas.

WANTED—Experienced beeman for permanent position. Migratory honey production and pollination service. Good habits, reference required. O. F. Darnell, 609 No. F. St., Porterville, Calif.

MISCELLANEOUS

FOR SALE—Royal Jelly and The Little Queen Royal Jelly Extractor. Royal Jelly Enterprises, 1017 Los Carneros Avenue, Napa, California.

WANTED—50 colonies bees. Late March, April. Fred Russell, Chelmsford, Mass.

FOR SALE — Royal Jelly in capsules. Each contains Royal Jelly, 10 mgm., Vitamin C, 5 mgm., Calcium, 5 mgm. Boxes of 30, $1.50 to beekeepers, retails for $3.00. Special prices on 10 boxes to dealers. PRAIRIE VIEW HONEY CO., 12303 12th St., Detroit 6, Michigan.

FRESH ROYAL JELLY, $20.00 per ounce. Prices quoted to Doctors and Hospitals, on request. O. K. Anderson & Son, P. O. Box 193, Phone 466 R5, Coffee Springs, Ala.

FOR SALE—Royal Jelly capsules. Royal Jelly, 25 mg., Vitamin C, 5 mg., Calcium, 5 mg. Per box of 30, $2.50. Also packed in jars of 1,000 to hospitals, clinics and other large users. PRAIRIE VIEW HONEY CO., 12303 12th St., Detroit 6, Mich.

INTERESTED in bees for lease and sale. Middle Atlantic States north of Virginia. Box 357, Gleanings, Medina, Ohio.

WANTED: GLEANINGS prior to 1953. Write number and price. Gleanings, Box 34, Medina, Ohio.

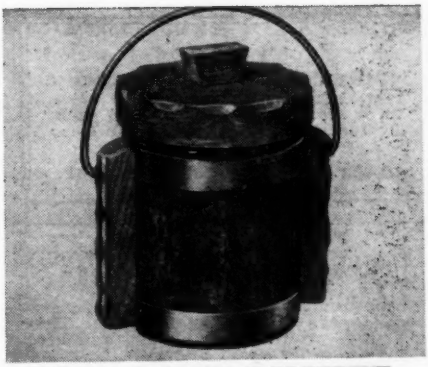
POSITION WANTED

EXPERIENCED beekeeper desires year around employment. References on request. Box 1919, Gleanings, Medina, Ohio.

EXPERIENCED beekeeper, middle age, does not smoke or drink, wants permanent position. Box No. 115, c/o Gleanings, Medina, Ohio.

MAGAZINES

Archiv fur Bienkunde, International journal for Bee Culture and beekeeping economics. Founded in the fall of 1918. Oldest economic bee journal in the world. Praised again and again for its decades of

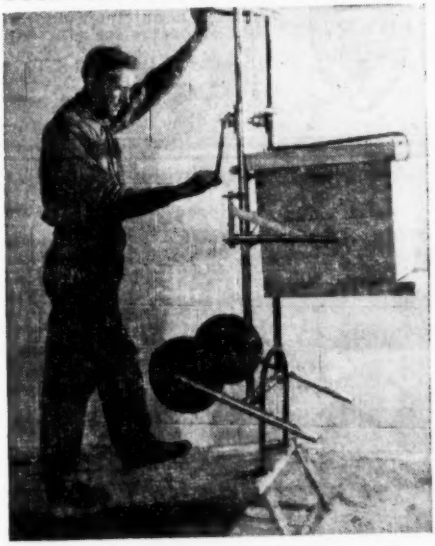


GOLD RUSH BUCKET

Filled with Miller's Creamy-Clover HONEY

For those friends who "have everything!" Smart, reusable Philippine Mahogany bucket with brass trim holds 12 oz. of Miller's Creamy-Clover Honey...a delicious, dripless honey spread! Made from pure, white clover honey, gathered by Miller's famous "traveling bees" you read about in Reader's Digest! A honey of a gift...new, different, inexpensive! Shipped prepaid anywhere in U.S.A., tax incl., $2.00. Send check or m.o. (no C.O.D.) to:

MILLER'S HONEY COMPANY
Dept. "GB" Colton, California
The Honey of Honeys since 1894



Kruse all steel superlifter and ramp. One man can lift heavy beehives 60 inches above ground. See your dealer or write to:

KRUSE SUPERLIFTER
Luck, Wisconsin or Pipestone, Minnesota

1957
3-Banded Italian Queen Bees
1-24 ..... $1.25 each
25 or more ..... 1.10 each
Queens ready about April 1
GEO. W. MOORE
SHASTA Shasta, County CALIF.

PACKAGE BEES AND QUEENS
BRIGHT 3-BANDED ITALIANS
KEEP US IN MIND

For fine quality bees and dependable service, 34 years of selective breeding. They are gentle, prolific, and honey producers. Book your order now.

	PRICES — 1-11	12-100
2-lb. pkg. with queen	$4.00	$3.75
3-lb. pkg. with queen	5.00	4.75
Untested queens	1.10	1.00

We guarantee health certificate, full weight, safe arrival.
NORMAN BROS. APIARIES Ramer, Ala.

HOLLOPETER'S
Hardy
Honey-gathering
ITALIAN QUEENS
in season
White Pine Bee Farms
Box 810 Rockton, Pa.

independent leadership through many endorsements and advice as a valuable source also for the practice. Classic. Yearly DM 5.50. Any aspiring beekeeping friend will receive a sample copy. Biene-Verglag, Gielbach, Lindau, Germany.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3106, Cape Town, South Africa.

Know interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh Dist. Naini Tal, U. P. India or available through them. Subs. Rs9/ or 15 shillings or $2.25 yearly. Sample copy post free for Rs 1/8, or s2/6, or 20 cents (International Money Order). Payment in mint postage stamps of your country accepted.

YOU'LL LIKE GOAT MILK! Profit and health with dairy goats. Sample monthly magazine and information FREE. Dairy Goat Journal, Dept. T., Columbia, Mo.

INTERESTED in Angora Goats? Read the Sheep and Goat Raiser, Hotel Cactus, Box 189, San Angelo, Texas, the only ranch magazine published serving the Angora Goat industry. Subscription $3.00. Sample copy 25 cents.

BEE WORLD, the international journal of the Bee Research Association published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $5.50 per annum, or $6.00 including membership of the Bee Research Association. Apicultural Abstracts only $4.50 per annum from the Hon. Subscription Secretary, Bee Research Association, 10 Barnett Wood Lane; ASHTEAD, Surrey, England.

MARCH PACKAGES . . . "GULF BREEZE" . . . MARCH QUEENS

We have open dates for March packages and queens for shipment starting about the 20th. Some open dates the first half of April. No further orders for after April 20th until further notice.

PRICES:

Quantity	Queens	2-lb. pkg. w/q	3-lb. pkg. w/q	4-lb. pkg. w/q
1-9	$1.40	$4.35	$5.45	$6.60
10 49	1.30	4.10	5.20	6.30
50-200	1.20	3.85	4.95	6.00

BESSONET BEE COMPANY DONALDSONVILLE, LA.

THREE-BANDED ITALIAN PACKAGE BEES AND QUEENS

Shipped anywhere in United States and Canada

1957 Prices FOB Hampton, S. C.	Queens each	2-lb. & Queen	3-lb. & Queen	4-lb. & Queen	5-lb. & Queen
1-24 pkgs.	$1.30	$4.00	$5.00	$6.00	$7.00
25-99 pkgs.	1.20	3.75	4.75	5.75	6.75
99 up	1.10	3.50	4.50	5.50	6.50

(For queenless packages deduct the price of queen)
Queens clipped and painted if desired. Health certificate with each shipment.
Guaranteed safe arrival. Shipper rated in Dun & Bradstreet
TERMS: One-third with order, balance 15 days before shipment.

H. C. BRUNSON P.O. Box 188 Phones: 2161 & 5303 Hampton, S. C.

PACKAGE BEES ITALIAN QUEENS
Good Producers — Gentle
You will like them. Good service.
A. R. BANTA Los Molinos, Calif.

Better-Bred Queens

Three-Banded Italians

The time is NOW. The place is the CALVERT APIARIES. The stock — Our **Better-Bred** Queens and Bees. We have plenty of bees to fill your order promptly. Book NOW and get them when you want them — please.

	Queens	2-lb. w/q	3-lb. w/q
1-24	$1.40	$4.25	$5.35
25-100	1.15	3.75	4.75

Calvert Apiaries

Calvert, Alabama

LET'S TALK ABOUT HONEY PLANTS

(Continued from page 167)

been of very minor importance, at least during the past two years, and does not appear to have yielded any appreciable surplus in Colorado. "Rocky Mountain bee plant grows quite generally over the state along roadsides, in grain fields, and waste land where the soil is dry (sand and gravel). The largest concentration of plants that I have seen was in the grain fields of the San Luis Valley during the summer of 1956, where in certain areas you could find two or three acres of grain field with about one to four Rocky Mountain bee plants per square foot.

"Sometimes the bees visit the flowers very actively, but at other times you cannot find any on the blossoms. The sugar content of the nectar has a range of 26.8 to 31.8 per cent. The liquid in the honey stomach has a very light yellow tint. Small pollen pellets were found on one-eighth of the bees examined and varied in color from dark green to brownish. One of the San Luis Valley beekeepers told me when bees gathered large quantities of the nectar, the honey will be an off flavor."

Mr. Wilson had been making a two-year study of the honey plants of Colorado for a thesis.

Let us help you to produce the best crop of honey by supplying your

PACKAGE BEES
"They Produce"

For quality and service that pays off in larger honey crops place your order early. Orders are coming in for April dates now. Don't miss your preferred date. Place your order now, pay later. Trucks loaded by appointment. Due to cost, prices will be as follows:

	2-lb. w. reg. qn.	3-lb. w. reg. qn.
1-24	$4.25 ea.	$5.35 ea.
25-99	4.00 ea.	5.10 ea.
100-up	3.75 ea.	4.85 ea.

For Island Hybrid queens add 35c each.

"Satisfaction Guaranteed"

ROSSMAN APIARIES
P. O. Box 133 Moultrie, Ga.

HIGH QUALITY ITALIAN
Queens & Package Bees

2-lb. pkg. w/q	$3.75	50 & up	$3.50
3-lb. pkg. w/q	4.85	50 & up	4.65
Queens	1.20		
50 & up	1.00 air mail		

Bees are reasonably gentle, very prolific, and extra good honey gatherers. Live arrival and health certificate guaranteed.

CARLUS T. HARPER
New Brockton, Ala.

SELECT ITALIAN QUEENS
$1.00 each

As nature's pattern — we never give a nurse colony more than 20 cells at any one time, which results in better queens.

O. K. Anderson & Son
P.O. Box 193 — Phone 466 R5

Coffee Springs, Ala.

XUM

FRAMEWORK ITALIAN QUEENS

The increasingly popular genetically-bred strain that is pleasing in price, production, and profit; and fulfilling the demands of the most particular of professional or hobbyist beekeepers. Choice young laying queens:

1-9 ..... $1.00 10-99 ..... $0.95 100-up $0.90

"Offering Quality and Service in Quantity"

BOB GALE'S APIARIES

P. O. Box 472 Phone 2567 Bunkie, Louisiana

JENSEN'S PACKAGE BEES & QUEENS

"Have Stood the Test of Time"

	Packages with Dadant "Starline" Hybrid Queens			Pkgs. with Jensen's "Magnolia State" Italian Queens		
	1-24	25-99	100-up	1-24	25-99	100-up
2-lb.	$4.55	$4.30	$4.05	$4.25	$4.00	$3.75
3-lb.	5.65	5.40	5.15	5.35	5.10	4.85
4-lb.	6.75	6.50	6.25	6.45	6.20	5.95

Via Express collect or Parcel Post add postage. Reg. U. S. Pat. Off.

Queens: Starline Hybrids $1.70 $1.60 $1.50 "Magnolia State" Italians $1.40 $1.30 $1.20

Clipped and Marked Free. Air Mailed Postage-paid.

If queens are wanted in our Special Reservoir Carriers in lots of 50-100, write.

JENSEN'S APIARIES Macon, Mississippi U.S.A.

ITALIAN PACKAGE BEES AND QUEENS

	1-24	25-99	100-up
2-lb. pkg. w/q	$4.00	$3.75	$3.50
3-lb. pkg. w/q	5.00	4.75	4.50
4-lb. pkg. w/q	6.00	5.75	5.50
Extra Queens	1.25	1.15	1.10

Guaranteed Safe Arrival Health Certificate with Each Shipment

GOLD LEAF APIARIES BOX 252 HAHIRA, GEORGIA

WHAT'S WRONG WITH BEEKEEPERS?

(Continued from page 149)

Until recently our failure to standardize our pack of honey was a serious handicap to its acceptance. But government aid in recent years, and a few honey marketing orders have helped to make our honey packages less confusing than they once were.

"Beekeepers do not advertise enough." From the relatively small amount produced, the exquisite flavors, and the unique qualities of our product there is really little reason why honey should not bring considerably better prices than it does today. When I think of the relative values of honey and coffee, for example, I boil. There is just one reason for the difference in price; coffee is under a controlled supply and in relatively strong demand. While on the other hand we have not yet convinced people that honey will do more for them than coffee will do. One thing will do this—advertising. I don't mean that every beekeeper should rush out and buy $10.00 worth of advertising space in his local paper or on his local radio. While that may help a little we will never get our money's worth that way. To effect a successful advertising program for honey, one that will put our product on a plane where we of this generation have never seen it, we will first have to overcome a few of our shortcomings.

It's nice to think about; if we'll ever do it I don't know. But take it from me, if we ever do—nothing can hold us back!

FOREHAND'S HONEY-GETTERS

FROM THE HEART OF THE DEEP SOUTH

Where the climate conditions are always ideal to produce the finest bees and queens that can be reared anywhere in the world.

PACKAGE BEES WITH QUEENS

	1-24	25-100
2-lbs.	$4.25	$4.00
3-lbs.	5.35	5.05
4-lbs.	6.45	6.20
5-lbs.	7.50	7.25
Extra Queen	1.40	1.30

All bees and queens are Italian stock.

HUBER FOREHAND APIARIES

P. O. Box 11 Satsuma, Ala.

Phone: Glendale 2-4968

"50 Years Among the Bees".

Buy U. S. Savings Bonds
They come in all sizes....
and grow bigger every year.

CAUCASIAN QUEENS & BEES FOR '57

Prices	Queens	2-lb. w/q	3-lb. w/q
1 to 9	$1.40	$4.25	$5.25
10 to 48	1.30	4.00	5.00
49 and up	1.20	3.75	4.75

Notice: No package orders after May 15th, but queens will be available as usual.

HOWARD WEAVER
Navasota, Texas

LITTLE'S ITALIAN QUEENS
ROYAL JELLY

Booking orders for 1957 season.
1 to 24, $1.40; 25 to 99, $1.30; 99, up $1.20
Write for jelly prices.

LITTLE'S APIARIES
P.O. Box 122 Shelbyville, Tennessee

Italian Queens for May Delivery

1 to 9	$1.40
10 to 50	1.30
51 & up	1.20

No more package orders. Thanks.

WEAVER APIARIES
Navasota, Texas

ITALIAN BEES AND QUEENS

2-lb. pkg. w/q	$3.70
3-lb. pkg. w/q	4.75
4-lb. pkg. w/q	5.50
5-lb. pkg. w/q	6.40
Extra queens,	1.00
Tested queens	1.80

10% books your order, balance 10 days before shipping time.
Health certificate with each shipment.
GASPARD BEE CO. Hessmer, La.

LIVE AND LEARN

(Continued from page 165)

using them just because the dandelions are blooming. Many, many times, there is not enough nectar coming in to keep the colony building up, in spite of what your eyes see in the fields.

Maybe it is wasteful, but I generally keep watching for low stores, and sometimes feed clear into June. On the other hand, maybe that is why my lifetime average is close to 50 pounds per colony in this land of sand and saltwater.

ITALIANS

QUEENS **BEES**

Quality and service guaranteed to please.
Booking is heavy, please order early.

	1-24	25-99	100-up
2-lb. pkg. w/q	$4.25	$4.00	$3.75
3-lb. pkg. w/q	5.25	5.00	4.75
Queens	1.40	1.30	1.20

For larger packages, add $1.00 per lb.

Sunrise Apiaries

Petal, Mississippi

FLOWERS' QUALITY ITALIANS

THAT STAND TEST FOR HONEY GATHERERS: Gentle, prolific, bred from hives making 300 pounds or over of honey. Fumagillin-fed grafting and queen yards. Health certificate with each shipment. We are better prepared to serve you with both packages and queens. COME AFTER YOUR BEES, or shipped express or P.P. Prompt live delivery guaranteed. Small orders cash; large orders, $1.00 deposit per package; balance two weeks prior shipping date. Queenless packages, deduct $1.00 per package.

All Packages with Queens F.O.B. Jesup

Quantity	1-25	26-109	110 or more
2-lb. pkg.	$3.75	$3.50	$3.25
3-lb. pkg.	4.75	4.50	4.25
4-lb. pkg.	5.75	5.50	5.25
5-lb. pkg.	6.75	6.50	6.25
QUEENS	1.25	1.15	1.00

Tested queens $2.50, all queens mated and laying. Delivered airmail. 1 or 1000.

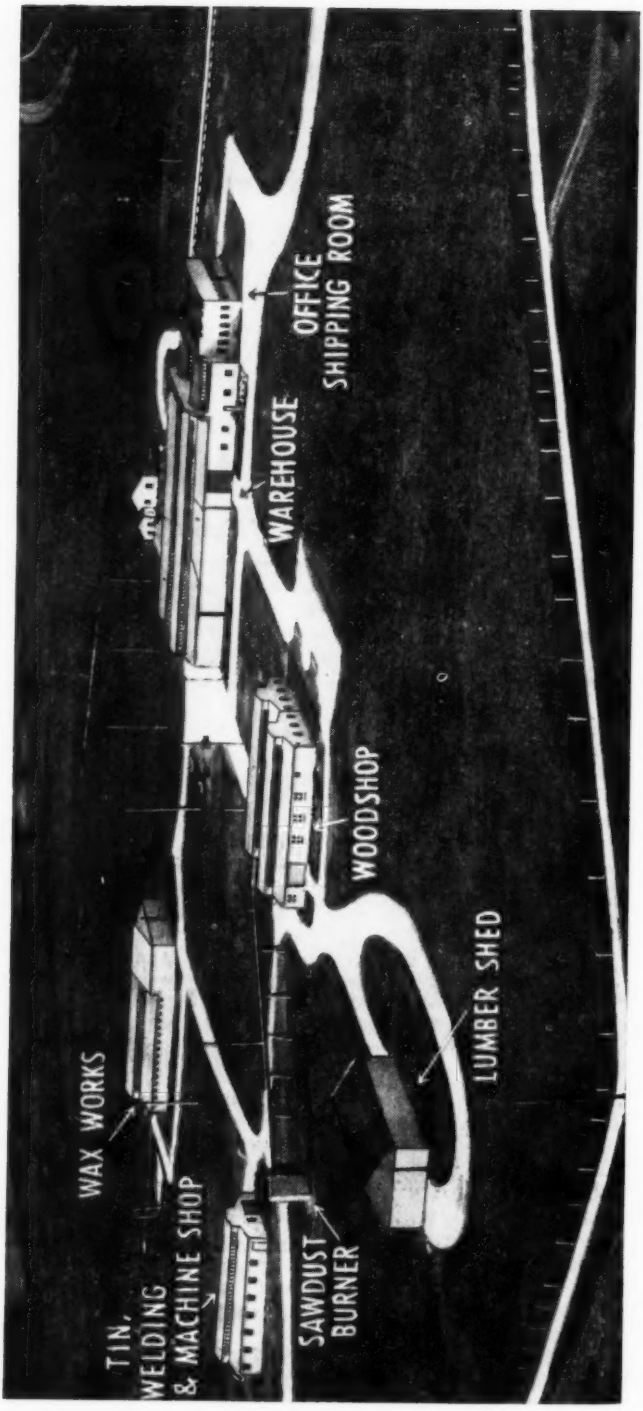
FLOWERS BEE CO. Jesup, Ga. U.S.A.

CARNIOLAN and CAUCASIAN QUEENS

Only source of original strain of imported queens by the late Albert G. Hann.

Queens, $1.35 each, air mail, discount on quantity. Queens to foreign countries, $2.00 each. Safe arrival in continental U. S. only. Ready March 1.

W. D. REAMS
Box 87 LaBelle, Fla.



THIS IS a recent airplane view of our beehive factory and the surrounding grounds. In the far upper right-hand corner you will see U.S. 62 and Illinois Central Railroad that pass directly in front of our plant. You have no parking problem at our plant because it is located on a 100-acre farm, 1½ miles west of Clarkson. All of the wooden goods listed in our catalog are manufactured in the building marked WOOD SHOP. All of our comb foundation is manufactured in the building marked WAX WORKS. In the TIN and WELDING SHOP we manufacture our hive loaders, our two wheel trucks, our honey extractors, tanks, double boilers, and many other items.

We are large operators, buying our lumber direct from the western mills, our steel direct from the mills, and our wax direct from you beekeepers. We do not sell through dealers but direct to you beekeepers, so our prices are surprisingly low on the highest quality equipment. We have just mailed out our 32nd annual catalog and if you did not receive one write at once for your free copy, which contains 64 pages, the largest bee supply catalog published.

The
WALTER T. KELLEY CO.

Clarkson, Kentucky

TOPS in Package Bees and Queens — 1957
Bees Will Cost More This Season

Get your money's worth in Dadant Starline Hybrids and/or, GARON'S Three-Banded Italians. Send us a postal card for our latest leaflet on Dadant Starline Hybrids.

Prices to May 15th:

QUEENS	Italians	Starlines	2-lb. w/q	3-lb. w/q	Pat. Off. Reg. U. S. 4-lb. w/q
1-24	$1.25	$1.65	$3.95	$4.90	$5.85
25-99	1.20	1.55	3.85	4.80	5.75
100-up	1.15	1.45	3.75	4.70	5.65

For Packages with Starline Queens, add 25c extra per package

GARON BEE COMPANY **Donaldsonville, La.**

THREE BAND and PURE ITALIAN HYBRID
Package Bees and Queens

We ship pure worker bees by mail, express, or truck—with queens introduced or not whichever you like. We guarantee live arrival.

1 9 5 7 PRICES
Each with a Young Laying Queen

Lots of	2 lbs.	3 lbs.	4 lbs.	5 lbs.
1 to 11, Each	$4.25	$5.35	$6.45	$7.55
12 to 29, Each	4.05	5.10	6.15	7.20
30 or More, Each	3.85	4.85	5.85	6.80

Untested Queens, 1 to 11, $1.40; 12 to 29, $1.30; 30 or more, $1.20.
Tested Queens, $2.00 each.

JACKSON APIARIES **P.O. Box 58** **Funston, Ga.**

All 1956 Orders Filled Without Much Delay
Let Us Fill Your 1957 Orders.

2-lb. packages with queens	$3.00 any number
3-lb. packages with queens	4.00 any number
Untested queens	1.00 any number
Tested queens	1.50 any number
Larger packages, add	1.00 per pound

Delivered prices on request. Above prices are F.O.B. except queens which are delivered by mail. Italians only. Remember our 100% Satisfaction always good. If you need more information, write us please.

MERRILL BEE COMPANY P.O.Box 115, State Line, Miss.

PACKAGE BEES QUEENS
"ITALIANS"

Wilbanks offers you tested stock proven for honey producing ability and easy handling. Satisfied customers through the years assure you of the greatest value here.

PRICES	1-9	10-49	50 up
2-lb. pkg. with young laying queen	$4.24	$4.00	$3.75
3-lb. pkg. with young laying queen	5.35	5.10	4.85
4-lb. pkg. with young laying queen	6.45	6.10	5.85
Extra Queens	1.40	1.30	1.20

Shipments by Express, Parcel Post, or your Truck
Quality Does Not Cost — It Pays

THE WILBANKS APIARIES **Claxton, Georgia**

XUM

CLOVERLINE HYBRIDS

CROSS BRED **PURE ITALIAN**

DOLLAR FOR DOLLAR YOU GET MORE

1 MORE HONEY. Actual tests under rigid commercial field conditions prove that CLOVERLINES will consistently produce more honey.

2 MODERN BREEDING facilities are used in the carefully controlled CROSS BREEDING of our parent strains of selected Italians.

3 NO BABY MATING BOXES. ALL CLOVERLINE queens are mated only in special equipment emphasizing the use of standard size brood combs. This allows thorough appraisal and inspection of every queen under NORMAL egg laying conditions before acceptance for package shipment. This careful checking out procedure results in less supersedure in newly installed package colonies.

4 HIGHLY TRAINED full time bee men are your guarantee of properly controlled cross breeding, proper caging and handling, and proper shipment. We employ no seasonal or temporary labor.

5 NO DRONES, and overweight of young bees are the rule for every package. This insures full weight on arrival at destination.

6 GUARANTEED live delivery and certificate of inspection with every shipment.

7 QUICKER DELIVERY and LOWER SHIPPING COSTS are often realized as we are located farther North than most shippers. Three main-line railroads give fast night and day service to all points.

Prices with CLOVERLINE HYBRID Queens

	1-24	25-99	100 up
2-lb. pkg.	**$4.40**	**$4.15**	**$3.90**
3-lb. pkg.	**5.50**	**5.25**	**5.00**
4-lb. pkg.	**6.60**	**6.35**	**6.10**
5-lb. pkg.	**7.70**	**7.45**	**7.20**
CLOVERLINE HYBRID QUEENS	**1.70**	**1.60**	**1.50**

Shipments begin March 20th.

CLOVERLINE APIARIES

Phone 3-6656

P.O. Box 5126 **Columbia, S. C.**

(Continued from page 177)

be summarized in the resolutions passed by the American Beekeeping Federation, a summary of which follows:

Resolutions 1 to 8 have to do with deceased members and thanks for arrangements covering the Convention facilities.

Resolution 9. Request for more and better adapted legumes in the soil bank acreage Reserve and Conservation Programs. It was also suggested that the state delegates urge beekeepers in their area to work with the Agricultural Stabilization and Soil Conservation Service and the Agricultural Extension officers in their counties relative to this matter.

Resolution 10. To expedite interest in the participation in the Check-Off Plan—resolved that the Federation request the honey packers and dealers to automatically deduct from all honey purchased (except in California, Idaho, and any other state having a marketing order) 1 cent per can from the producer and contribute 1 cent per can with the provision that the producer's share may be refunded on written request from him.

Resolution 11. That the directors should encourage the County and State beekeepers' organizations to actively promote the teaching, extension, and research activities in all of their educational institutions.

Resolution 12. A request to the Railway Express Agency to instruct all of their agents in the handling of package bees to insure safe delivery.

Resolution 13. A request to USDA to continue honey price support at 80% of parity or 11 cents per pound, which ever is the greater.

Resolution 14. A request that the export subsidy program be held in abeyance but ready to use if and when it is needed to move surplus honey.

Resolution 15. An expression of thanks to the National Honey Packers' and Dealers' Association for their cooperation and financial assistance and to the American Honey Industrial Council and the American Honey Institute for their cooperation and financial assistance in sponsoring the booth at the Home Economics during National Honey Week.

Resolution 16. A petition to the USDA to appoint an industry representative as a member of the Sugar Research and Marketing Advisory Committee.

Resolution 17. A request to the USDA that the price differential in the honey price support program be discontinued.

Resolution 18. A request to the United States Postal Department to design, print, and sell a postage stamp depicting the honeybee, to better acquaint the public with its importance to agriculture.

Resolution 19. A request by the Pesticide Committee that the directors of the American Beekeeping Federation explore the possibility of getting the Federal Crop Insurance Program to include the loss of production of honeybee colonies due to injuries caused by the application of chemicals in the control of injurious insects—that this program also be approached at the local and county and state levels by local beekeepers' associations to improve the teaching, extension, and research facilities in beekeeping in each state to secure improved understanding of the value of bees, to secure the support of agricultural groups to help prevent the undesirable loss of bees through pesticides, to secure better supervision of injurious pesticides, and to encourage the use of the least toxic pesticides.

Resolution 20. Ask that the Federation support the efforts of W. F. Straub and Company to remove the discriminatory part of the proposed prune juice order which prevents honey from being used as an added ingredient and that the Federation collaborate with the National Honey Packers' and Dealers' Association in selection of representations of the Council to appear in Washington at the scheduled hearing to support this effort.

Resolution 21. A request to the U.S. Standards that the proposal to change grades of comb honey be deferred until further consideration of an action can be made by the Federation.

Resolution 22. Request of the U.S. Department of State and the U.S. Department of Agriculture that a continuing and vigorous effort to have tariffs reduced in those countries of western Europe where the country in the main produces insufficient honey to supply its own demand—that these rates of 30% to 85% ad valorem be reduced at least to the levels of the Benelux countries where the tariff is only 12%.

QUEENS

Italians		Caucasians	
With queens	1-24	25-99	100 up
3-lb. pkg.	$5.00	$4.90	$4.85
2-lb. pkg.	4.00	3.95	3.90
Nice large queens	1.15	1.10	1.00

We have enlarged our queen yard to fill the great demand for our queens. Send us your order of 1 or 1000.

MITCHELL'S APIARIES
Bunkie, La.

We sell quality bred Italian Queens and package Bees

Italian Queens $1.25
3-lb. pkg. Bees with Queen, $6.00
Postage Paid Delivered to You.
We are always in the market for Quality Honey.
Send sample.

THE FRED W. MUTH CO.
2315 Florence Avenue,
Cincinnati 6, Ohio
Phone: AVon - 1 - 5583

CAUCASIAN or ITALIAN
Package Bees and Queens for 1957

Gentle bees, less swarming, good producers, health certificate and live arrival guaranteed are just a few things you get when your requirements are sent to me. No extra charges on orders booked in advance.

	1-25	25-50	50-100
2-lb. pkg. w/q	$3.70	$3.45	$3.20
3-lb. pkg. w/q	4.60	4.30	4.00
4-lb. pkg. w/q	5.50	5.15	4.80
5-lb. pkg. w/q	6.40	6.00	5.60
Queens	1.20	1.10	1.00

FARRIS HOMAN
SHANNON, MISS.

J. E. WING & SONS
43 Years Continuous Service
Italian Package Bees and Queens
Our Specialty
Knights Landing, Calif.

Healthy Italian Bees & Queens
Write for 1957 Prices
Georgia Bee & Honey Apiaries
P. O. Box 312 Hortense, Ga.

MY EXPERIENCE IN FEEDING POLLEN SUBSTITUTE

(Continued from page 171)

ed nectar for only a short time. Around July 3 the main flow suddenly cut off and we had to be satisfied with a 111-pound average.

I think I know what was wrong with Propolis Pete's pollen substitute. At one time A. E. Staley Mfg. Co., produced soy flower by the expeller process method, the kind recommended for a pollen substitute. This process has been discontinued and the chemical extraction process is the only one in use.

In studying Staley's technical data sheet I note they manufacture five or six different kinds of soy flour. Only one of these is suitable as a pollen substitute—Staley's Lo-Fat Soy Flour. It is a toasted product and all traces of solvent have been removed. When I order it I specify that it is toasted so there will be no mistake.

I noticed that Propolis Pete complained of what little larvae there was as being sickly. That sounds like he was using a soy flour that still contained the solvent.

It is interesting to note in experiments conducted at North Platte, Nebraska, in 1945-1950, on various combinations of pollen substitutes, that when soy flour was fed alone there was practically no increase or decrease of honey production or stimulation of colony strength when compared to the check lots of bees. The thought is that the value of soybean flour lies in its being edible and acceptable to the bees, and its ability to act as a carrier of other materials.

Last year, 1956, was our first experience with a pollen substitute. You might call it a trial run. We learned three things : (1) We will feed about three weeks earlier if the weather permits. (2) A mixture of four parts of soy flour to one part of brewer's yeast produces more brood and is more attractive to the bees than the recommended six to one mixture. (3) To keep a closer check on the weaker colonies in regard to the feeding of the pollen substitute.

York's Quality Bred Package Bees and Queens

Reg. U.S. Pat. Off.

The Preference of Leading Honey Producers
Your Choice of

Packages with Starline Queens				Packages with Italian Queens			
Quantity	1-24	25-99	100-up	Quantity	1-24	25-99	100 up
2-lb.	$4.55	$4.30	$4.05	2-lb.	$4.25	$4.00	$3.75
3-lb.	5.65	5.40	5.15	3-lb.	5.35	5.10	4.85
4-lb.	6.75	6.50	6.25	4-lb.	6.45	6.20	5.95
5-lb.	7.85	7.60	7.35	5-lb.	7.55	7.30	7.05
Extra Queens				Extra Queens			
Starline	1.70	1.60	1.50	Italian	1.40	1.30	1.20

Queenless packages — deduct $1.00 per package
Tested Queens, add $1.00 per package or extra queen

TERMS: Shipments are made FOB Jesup by express, parcel post, or your truck. Bees are certified bees from our own apiaries, state registered, and state inspected. If convenient, small orders cash, and larger orders $1.00 deposit per package with balance payable two weeks prior to shipment.

York Bee Company Jesup, Georgia

(The Universal Apiaries)

P. O. Box 300 412 W. Orange St. Phones 3522, 3320

SUE BEE SAYS:
"WRITE FOR MY 1957 CATALOG."

In it you will find listed Leahy hives, supers, and frames, SUE BEE Foundation for strong lasting combs, and many other items, all quality merchandise at a competitive price.

We are always in the market for beeswax and will pay you top market price in cash or in exchange for supplies and foundation.

If you have rendering to be done write for our low rates and free shipping tags.

SIOUX HONEY ASSOCIATION Sioux City, Iowa
ROGERS, TEXAS WAYCROSS, GEORGIA TACOMA, WASHINGTON
LIMA, OHIO ANAHEIM, CALIFORNIA

BEES QUEENS

Rearing Italian bees and queens of reliable quality is our only business.
47 Years Experience

	1 to 24	25-99	100-up
2-lb. pkg. with queen	$4.25	$4.00	$3.75
3-lb. pkg. with queen	5.35	5.05	4.75
4-lb. pkg. with queen	6.45	6.10	5.75
5-lb. pkg. with queen	7.55	7.15	6.75
Queens	1.40	1.30	1.20

For queenless packages deduct $1.00 per package. Tested queens $2.50.
All queens postpaid. Packages F.O.B.

W. E. PLANT Hattiesburg, Miss.

Look for this Sign
When you Want
QUALITY AT LOW COST

Trade Mk. Reg.
U. S. Pat. Off.
KELLEY — "The Bee Man"

KELLEY'S ISLAND

Improved three-banded Italian bees and hybrid queens direct from our own farm. Shipments start April 1st, express or parcel post shipment. Thousands of extra queens.

	Queens	2-lb. w/q	3-lb. w/q
1-24	$1.25	$4.25	$5.25
25-99	1.20	4.00	5.00
100-up	1.15	3.75	4.75

As this magazine goes to press the season on our bee farm is two weeks earlier than normal and it now appears that we will have bees and queens ready for shipment about March 15th. If you need bees and queens early contact us.

THE WALTER T. KELLEY CO. Clarkson, Ky.

OLDEST BEE JOURNAL IN THE ENGLISH LANGUAGE

Keep up on markets, practices, scientific data, regulations and plant possibilities.
1 year, $2.00, U. S. and Canada
Foreign postage, 50s a year extra

AMERICAN BEE JOURNAL
Hamilton, Illinois

A Modern Theory on Swarming

Don't expect queen bees to overwork themselves. They will only prepare to swarm. Details in booklet sent for 25c coin.

W. F. PERSCHBACHER
9620 107A Ave. Edmonton, Alta., Can.

Index to Display Advertisers

Aeppler Co., C. W. 180
American Bee Journal 192
Anderson & Son, O. K. ...183
Australian Bee Journal 134
Banta, A. R. 182
Bessonet Bee Co. 182
Blue Bonnet Apiaries 180
Brunson, H. C. 182
Burleson & Son, T. W. 134
Calvert Apiaries 183
Cary Corp., Mary R. 130
Chrysler & Son, W. A. 131
Cloverline Apiaries 188
Dadant & Sons,
.....Inside front cover
Flowers Bee Co 185
Forehand, Huber 184
Gale's Apiaries, Bob 184
Garon Bee Co. 187
Gaspard Bee Co. 185
Gentry's Feed &
Seed Store 131
Gold Leaf Apiaries 184
Harper, Carlus T. 183
Hazel-Atlas Glass Co.
.....Inside back cover
Homan, Farris 190
Honey Sales Co. 131
Hubbard Apiaries 135
Hutchison Mfg. Co. 135
Jackson Apiaries 187
Jensen's Apiaries 184
Jepson Co., H. H. 134
Jones, F. W. & Son, Ltd. 135
Kelley Co., The
Walter T. 186, 192
Kruse, F. A. 181
Leverette Apiaries,
Walter D. 180
Little's Apiaries 185
Lotz Co., August 131
Marshfield Mfg. Co. 134
McCord Mfg. Co. 130
Merrill Bee Co. 187
Miller's Honey Co. ..135, 181
Mitchell's Apiaries 190
Moore. Geo. W. 182
Morrill, Frank L. 134
Muth Co., The Fred W. ..190
New Zealand Beebeeper 130
Norman Bros. Apiaries 182
Perschbacher, W. F. 192
Plant, W. E. 191
Prairie View Honey Co. 130
Reams, W. D. 185
Root Co., A. I.
Outside back cover, 132
Rossman Apiaries 183
Schmidt Apiaries 134
Sioux Honey Asso. 191
Stoller Honey Farms 134
Stover Apiaries 136
Sunrise Apiaries 185
Taylor, Earl 180
Taylor, Stewart 131
Walker, Eugene 180
Weaver Apiaries 185
Weaver, Howard 185
White Pine Bee Farms ..182
Wilbanks Apiaries 187
Wing & Sons, J. E. 190
Williams Bros. Mfg. Co. 135
Woodman Co., A. G. 134
Yates, A. W. 130
York Bee Co. 191